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Date: March 6, 2000

File: 3050.005

Re: Inland Realty/Nixdorff

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3	3050.005	1999 Annual Ground Water Compliance Monitoring; Inland Realty Enterprises, L.L.C., Maryville, Missouri	Y

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Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

W E Wright
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Hydrogeologist



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1999 Annual Ground Water Compliance Monitoring

**Inland Realty Enterprises, L.L.C.
Maryville, Missouri**

February 2000

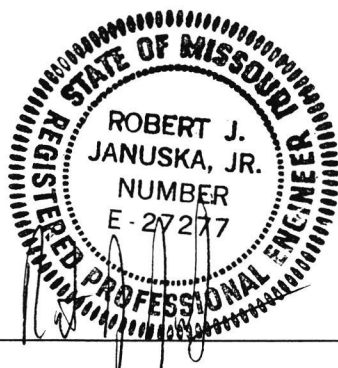


O'BRIEN & GERE
ENGINEERS, INC.

REPORT

1999 Annual Ground Water Compliance Monitoring

*Inland Realty Enterprises, L.L.C.
Maryville, Missouri*



Robert J. Januska, PE
Vice President

February 2000



O'BRIEN & GERE
ENGINEERS, INC.

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1. Introduction

The purpose of this report is to fulfill the reporting requirements of Missouri Hazardous Waste Management Facility Post-Closure Permit MOD099238784 (Permit) for the Inland Realty Enterprises, L.L.C. site located in Maryville, Missouri. The Permit application was approved March 1999. The Permit was transferred from Inland Realty Company to Inland Realty Enterprises, L.L.C. on or about November 1, 1999. The second and fourth quarters of 1999 ground water sampling events provide the basis for this report. Ground water samples were collected April 20-23 and October 25-28, 1999.

1.1. Site history summary

From the early 1970s to October 1981, a surface impoundment (lagoon) owned by Nixdorff-Lloyd Chain Company received spent pickling waste from the production of low-carbon steel chains. The surface impoundment was classified by USEPA and Missouri Department of Natural Resources (MDNR) as a treatment, storage, or disposal (TSD) facility. As such, the lagoon was subject to Resource Conservation and Recovery Act (RCRA) regulation. The pickling operation was discontinued and discharges to the lagoon ceased in October 1981. In November 1984, the lagoon's liquid contents were neutralized and decanted.

The lagoon closure activities began in late 1986 to early 1987 by using lime to stabilize the sludge, placing the sludge at the west end of the former lagoon, and capping the sludge. In 1989, a Notice of Violation (NOV) prompted a decision to cap the entire former lagoon. The lagoon cap was completed in April 1990.

In December 1993, Nixdorff-Krein Industries, parent company of Nixdorff-Lloyd, received concurrent requests from USEPA and MDNR for a Part B post-closure permit application for the former lagoon, which was prepared and submitted to both agencies in May 1994. Signed approval of the post-closure permit application was received in March 1999.

1.2. Monitoring system

Thirteen wells and four piezometers form the ground water monitoring system at the Inland Realty site. The well locations and present identification are shown on Figure 1. Four wells (GMW #1 through GMW #4) were originally installed in 1982. GMW #1 was the farthest upgradient well and was located northeast of the former impoundment area. This well was located on property owned by the Missouri Department of Transportation (MODOT), and a large pile of road salt was formerly stored near the well. Thereafter, eight additional wells (GMWs 2D, 4D, 5S, 5D, 6S, 6D, 7, and 8) were installed. Upgradient background wells GMW #5S and GMW #5D were installed as replacement wells, and GMW #1 was no longer sampled and was closed December 1991.

Two wells (GMW #3S and GMW #3D) were installed approximately 125 to 150 feet downgradient of the former lagoon area. Additionally, four piezometers (PZ-1 through PZ-4) were installed to monitor ground water elevations. In 1990, GMW #9 was installed to replace GMW #8 which had been damaged. GMW #1 and GMW #8 were abandoned in 1991.

Sampling of ground water at the site began in or before 1984, and was performed on a quarterly basis from 1990 through 1998. The first Annual Compliance Monitoring Report under the Permit was submitted June 30, 1999. Under agreement with MDNR, per a letter of October 30, 1998 to Christine Kump of MDNR from Jim Myers of O'Brien & Gere, three semi-annual sampling events remain before Inland Realty may petition to modify or terminate the Permit (Section II.C. of Permit).

1.3. Historical ground water sampling

During 1989, the ground water monitoring network activities were in the detection phase of closure activities. Because the results of monitoring well GMW #4 triggered a statistical increase in several analytical parameters, verified by additional ground water sampling and analyses, a ground water quality assessment plan was prepared and submitted to MDNR. Closure activities reverted to the assessment phase. Between the first quarter 1990 through the fourth quarter 1998, the ground water monitoring system has been sampled quarterly.

From 1989 through second quarter 1991, statistical analyses were performed on the laboratory analytical results and field sampling parameters. Starting with third quarter 1991, following communication with MDNR, statistical analyses were no longer performed. To replace the statistical analyses, trend graphs of key parameters and key wells

were developed as part of the Annual Ground Water Report. These revisions were in the November 1991 Revised Ground Water Assessment Monitoring Plan and Sampling and Analysis Plan (SAP) which was submitted to MDNR. Revisions were based on correspondence between MDNR and O'Brien & Gere, and the requirements of the SAP were mutually agreed upon.

In addition to a modification of analytical data evaluation, three of the monitoring wells, GMW #6S, GMW #6D and GMW #7, were eliminated from quarterly sampling. The sampling frequency of these wells was decreased to annually and was scheduled to be performed during the second calendar quarter of the year. The November 1991 SAP was further revised in July 1993 and September 1997.

1.4. Historical analytical parameters

Ground water samples collected from GMW #1 through GMW #4 in 1984 were analyzed for RCRA ground water quality parameters. The analyses indicated a statistically significant increase in RCRA parameters downgradient of the former lagoon. Additional monitoring wells were installed, and analytical parameters were revised in 1985 to include pH, specific conductivity, fluoride, nitrate, chloride, dissolved metals (lead, zinc, iron, and chromium), sodium, sulfates, total organic carbon, total organic halides, and volatile halogenated organics. The analytical parameter list was expanded to include dissolved mercury in 1987 and cyanide in 1988. In February 1990, a revised sampling plan was approved by MDNR. The 1990 sampling plan analytical parameters were cadmium, chromium, lead, mercury, nickel, zinc, cyanide, total organic carbon, sulfates, pH, and specific conductivity. The metals analyses were for both total and dissolved constituents. The sampling plan and parameter listing were revised in the Fall of 1991 at the request of MDNR. The sampling frequency of GMWs 6S, 6D, and 7 was changed to annually, and the requirement for dissolved metals analyses was discontinued. The 1991 revised analytical parameters were cadmium, chromium, lead, iron, mercury, manganese, nickel, zinc, cyanide, sulfates, pH, specific conductivity, and temperature. In 1993, the analytical method for mercury was changed to Method 7470. In 1998, the method detection limits were lowered to 2 parts per billion (ppb) for lead and to 5 ppb for cyanide.

2. Sampling and analyses

2.1. Well sampling procedure

During semi-annual sampling events, ground water monitoring well sampling procedures set forth in the Ground Water Sampling and Analysis Plan (approved in March 1999) were followed. GMW #6S, GMW #6D, and GMW #7 are sampled annually. Following is a description of these procedures.

Before the wells were purged, the water level elevations were recorded. In addition, the pH and conductivity meter was calibrated according to the manufacturer's specifications prior to sampling at each well. Using the length of the water column, the quantity of water needed to remove three well volumes was calculated. Dedicated bailers with new lengths of polypropylene rope were used to remove at least three well volumes of ground water from wells that exhibited sufficient recharge. For both sampling events, GMW #2S and GMW #4S did not exhibit sufficient recharge to purge three well volumes. pH, specific conductivity, and temperature measurements were collected from the initial bailer of ground water and after removing each well volume. After consistent pH and specific conductivity readings were achieved, a set of ground water samples for laboratory analyses was collected, preserved with analyte-specific acids (where necessary), and cooled with ice in coolers. Ground water samples were delivered to the laboratory by overnight courier. Laboratory samples were analyzed by American Technical and Analytical Services, Inc. (ATAS) of St. Louis, Missouri. One duplicate ground water sample was analyzed by O'Brien & Gere Laboratories, Inc. of Syracuse, New York. Purge water was discharged to the Laclede Chain pretreatment system. The quantities of ground water purged from the wells are shown on the ground water sampling field logs (Appendix A). In April 1999, 294.5 gallons were purged from the monitoring wells, and in October 1999, 124 gallons were purged.

During the April 1999 sampling event, the depths of the wells below top of casing were measured to evaluate screen occlusion. Table 2-1, below, summarizes installed well depths, April 1999 measured well depths, and screen lengths. As indicated in Table 2-1, no well screen was occluded 5% or more. The difference in the depth measurement for 3D may be attributable to a mis-measurement when installed as the well depth was measured at 37.24 ft during the October 1999 sampling event.

Table 2-1 *Monitoring well total depth measurements*

<i>Location ID</i>	<i>Total well depth (installed)</i>	<i>Total well depth April 1999</i>	<i>Screen length (ft)</i>
2S	21.75	21.85	10
2D	32.06	32.11	5
3	18.50	18.61	10
3S	23.61	23.61	10
3D	36.66	37.25	10
4S	20.48	20.37	10
4D	37.09	37.08	5
5S	23.83	23.83	10
5D	37.77	37.77	5
6S	21.55	21.69	10
6D	28.65	28.65	10
7	27.87	27.92	15
9	29.97	30.03	15

Source: O'Brien & Gere Engineers, Inc.

2.2. Analytical results

Tables 2-2 and 2-3 summarize the laboratory analytical results from the April and October 1999 sampling events. Laboratory analytical reports may be found in Appendix B.

Table 2-2 Ground water analytical results – April 1999

Parameter	Units	Monitoring wells					Post-closure permit ground water protection standards
		2S	2D	3	3S	3D	
Cadmium-Total	mg/L	<0.005	<0.005	0.005	<0.005	<0.005	0.12
Chromium-Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	NE
Chromium-Hexavalent	mg/L	<0.05	<0.05	<0.05	<0.05	<0.01	0.24
Chromium-Trivalent	mg/L	NE	NE	NE	NE	NE	49
Lead-Total	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	3
Manganese-Total	mg/L	0.511	0.576	1.06	0.270	0.655	114
Mercury-Total	mg/L	<0.0002	0.0002	<0.0002	<0.0002	<0.0002	0.37
Nickel-Total	mg/L	0.007	<0.005	0.005	0.008	<0.005	10
Zinc-Total	mg/L	0.010	0.011	0.018	0.010	0.011	1,175
Cyanide-Total	mg/L	0.044	<0.005	0.019	0.066	<0.005	40
pH	S.U.	6.53	6.8	6.7	6.5	6.4	N/A
Specific Conductivity	micromhos/cm	1,436	945	987	1,107	881	N/A
Temperature	°C	13.9	11.4	11.2	9.9	11.6	N/A

NE – Not estimated (see section 2.3 for explanation)
N/A – Not applicable
Source: O'Brien & Gere Engineers, Inc.

Table 2-2 Ground water analytical results – April 1999 (continued)

Parameter	Units	Monitoring wells					Post-closure permit ground water protection standards
		3DA ¹	4S	4D	5S	5D	
Cadmium-Total	mg/L	<0.005	0.009	<0.005	<0.005	<0.005	0.12
Chromium-Total	mg/L	0.006	<0.005	<0.005	<0.005	<0.005	NE
Chromium-Hexavalent	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.24
Chromium-Trivalent	mg/L	NE	NE	NE	NE	NE	49
Lead-Total	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	3
Manganese-Total	mg/L	0.61	39.4	1.35	0.303	0.801	114
Mercury-Total	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.37
Nickel-Total	mg/L	<0.005	0.688	<0.005	0.015	<0.005	10
Zinc-Total	mg/L	0.02	1.85	0.016	0.015	0.010	1,175
Cyanide-Total	mg/L	<0.005	0.014	<0.005	<0.005	<0.005	40
pH	S.U.	6.4	6.1	6.5	6.2	6.88	N/A
Specific Conductivity	micromhos/cm	881	1,987	954	1,281	1,240	N/A
Temperature	°C	11.6	12.2	13.2	10.6	14	N/A

¹Duplicate of 3D

NE – Not estimated (see section 2.3 for explanation)

N/A – Not applicable

Source: O'Brien & Gere Engineers, Inc.

Table 2-2 Ground water analytical results – April 1999 (continued)

Parameter	Units	Monitoring wells					Post-closure permit ground water protection standards
		6S	6D	7	9	10 ²	
Cadmium-Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.12
Chromium-Total	mg/L	<0.005	<0.005	0.005	0.007	<0.005	NE
Chromium-Hexavalent	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.24
Chromium-Trivalent	mg/L	NE	NE	NE	NE	NE	49
Lead-Total	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	3
Manganese-Total	mg/L	0.102	0.144	0.219	0.774	<0.005	114
Mercury-Total	mg/L	0.0009	<0.0002	<0.0002	<0.0002	<0.0002	0.37
Nickel-Total	mg/L	0.007	<0.005	0.009	<0.005	<0.005	10
Zinc-Total	mg/L	0.016	<0.010	0.024	0.010	<0.010	1,175
Cyanide-Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	40
pH	S.U.	6.8	7.2	6.7	6.4		N/A
Specific Conductivity	micromhos/cm	466	473	343	861		N/A
Temperature	°C	12.1	12.8	11.6	13.5		N/A

²Sample of distilled water

NE – Not estimated (see section 2.3 for explanation)

N/A – Not applicable

Source: O'Brien & Gere Engineers, Inc.

Table 2-3 Ground water analytical results – October 1999

Parameter	Units	Monitoring wells					Post-closure permit ground water protection standards
		2S	2D	3	3S	3D	
Cadmium-Total	mg/L	<0.005	<0.005	<0.006	<0.005	<0.005	0.12
Chromium-Total	mg/L	0.005	0.005	<0.005	<0.005	<0.005	NE
Chromium-Hexavalent	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.24
Chromium-Trivalent	mg/L	NE	NE	NE	NE	NE	49
Lead-Total	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	3
Manganese-Total	mg/L	2.39	0.587	1.12	0.673	0.620	114
Mercury-Total	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.37
Nickel-Total	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	10
Zinc-Total	mg/L	0.050	0.031	0.013	0.015	<0.010	1,175
Cyanide-Total	mg/L	<0.005	<0.005	<0.005	0.028	0.005	40
pH	S.U.	6.28	6.17	6.25	6.13	6.14	N/A
Specific Conductivity	micromhos/cm	1,568	795	1,418	1,263	1,157	N/A
Temperature	°F	56.8	54.1	58.8	59.1	58.5	N/A

NE – Not estimated (see section 2.3 for explanation)

N/A – Not applicable

Source: O'Brien & Gere Engineers, Inc.

Table 2-3 Ground water analytical results – October 1999 (continued)

Parameter	Units	Monitoring wells					Post-closure permit ground water protection standards
		3DA ¹	4S	4D	5S	5D	
Cadmium-Total	mg/L	<0.005	0.009	<0.005	<0.005	<0.005	0.12
Chromium-Total	mg/L	0.006	0.009	<0.005	<0.005	<0.005	NE
Chromium-Hexavalent	mg/L	<0.01	0.209	<0.005	<0.005	<0.005	0.24
Chromium-Trivalent	mg/L	NE	NE	NE	NE	NE	49
Lead-Total	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	3
Manganese-Total	mg/L	0.60	1.15	1.02	1.04	0.798	114
Mercury-Total	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.37
Nickel-Total	mg/L	<0.005	<0.005	0.022	0.023	<0.005	10
Zinc-Total	mg/L	0.03	0.012	0.021	0.021	0.013	1,175
Cyanide-Total	mg/L	<0.005	0.011	<0.005	0.005	0.005	40
pH	S.U.	6.14	6.47	6.72	6.45	7.45	N/A
Specific Conductivity	micromhos/cm	1,157	3,420	1,698	1,987	1,140	N/A
Temperature	°F	58.5	64.4	63.4	57.2	52.4	N/A

¹Duplicate of 3D

NE – Not estimated (see section 2.3 for explanation)

N/A – Not applicable

Source: O'Brien & Gere Engineers, Inc.

Table 2-3 *Ground water analytical results – October 1999 (continued)*

Parameter	Units	Monitoring wells					Post-closure permit ground water protection standards
		6S	6D	7	9	10²	
Cadmium-Total	mg/L	NS	NS	NS	<0.005	<0.005	0.12
Chromium-Total	mg/L	---	---	---	0.007	<0.005	NE
Chromium-Hexavalent	mg/L	NS	NS	NS	0.021J	<0.005	0.24
Chromium-Trivalent	mg/L	NS	NS	NS	NE	NE	49
Lead-Total	mg/L	NS	NS	NS	<0.002	<0.002	3
Manganese-Total	mg/L	NS	NS	NS	1.53	<0.005	114
Mercury-Total	mg/L	NS	NS	NS	<0.0002	<0.0002	0.37
Nickel-Total	mg/L	NS	NS	NS	<0.005	<0.005	10
Zinc-Total	mg/L	NS	NS	NS	0.010	<0.010	1,175
Cyanide-Total	mg/L	NS	NS	NS	<0.005	<0.005	40
pH	S.U.	NS	NS	NS	6.68		N/A
Specific Conductivity	micromhos/cm	NS	NS	NS	1,132		N/A
Temperature	°F	NS	NS	NS	64.2		N/A

²Sample of distilled water

NS – Not sampled

J – Estimated value

NE – Not estimated (see section 2.3 for explanation)

N/A – Not applicable

Source: O'Brien & Gere Engineers, Inc.

2.3. Comparison to post-closure permit ground water protection standards

The ground water laboratory analytical results obtained from the second semi-annual sampling event have been compared to the post-closure permit ground water protection standards (GPS). These standards were developed as part of an exposure assessment that was performed for the site and are included in the post-closure permit.

Reported cadmium concentrations ranged from less than 0.005 mg/L (GMW #s 2S, 2D, 3S, 3D, 4D, 5S, 5D, 6S, 6D, 7, and 9) to 0.009 mg/L (GMW #4S). The highest reported cadmium concentration was approximately two orders of magnitude lower than the ground water protection standard of 0.12 mg/L. Reported hexavalent chromium concentrations were less than 0.005 mg/L for GMW #s 2S, 2D, 3, 3S, 3D, 4D, 5S, and 5D. The detection limit for hexavalent chromium for April 1999 is one order of magnitude higher than that recommended in the closure permit due to matrix interference. The detection limit identified in the closure permit was attained for October 1999. A review

of the five SW846 methodologies for hexavalent chromium analyses and discussions with both ATAS and O'Brien & Gere Laboratories personnel indicate that a method detection limit of 0.005 mg/L is not easily attainable due to interferences from chlorides and sulfates in the ground water. Also, the detection limit for total chromium is 0.005 mg/L; therefore, the reported concentrations for total chromium are more accurate and will be more consistent. For these reasons, the hexavalent chromium concentration of 0.209 mg/L for GMW #4S and 0.021J for GMW #9 may be inaccurate as total chromium was reported at <0.005 mg/L for GMW #4S and at 0.007 mg/L for GMW #9. As total chromium is equal to hexavalent chromium plus trivalent chromium, it would not be possible to have an accurate hexavalent chromium value of 0.209 mg/L when the total chromium concentration is <0.005 mg/L and 0.021J mg/L when total is 0.007 mg/L. However, even if the 0.209 mg/L hexavalent chromium value for GMW #4S were accurate, it is lower than the ground water protection standard of 0.24 mg/L. GMW #9 is one order of magnitude lower.

Based on the higher method detection limit for hexavalent chromium than for total chromium, the concentration of trivalent chromium was not calculated. However, the concentrations of trivalent chromium must be less than the concentrations of total chromium, all of which are reported as at least three orders of magnitude less than the 49 mg/L trivalent chromium ground water protection standard.

Lead was not reported above the method detection limit of 0.002 mg/L, which is approximately three orders of magnitude less than the ground water protection standard of 3 mg/L. Mercury was reported at 0.0009 mg/L, just above the method detection limit, which is approximately three orders of magnitude less than the ground water protection standard of 0.27 mg/L. Reported manganese concentrations ranged from 0.219 mg/L to 39.4 mg/L. The highest reported manganese concentration is approximately one-third of the ground water protection standard of 114 mg/L. Reported nickel concentrations ranged from less than 0.005 mg/L to a high of 0.688 mg/L. The highest reported nickel concentration is approximately 2 orders of magnitude less than the ground water protection standard of 10 mg/L. Reported cyanide concentrations ranged from less than 0.005 mg/L to 0.066 mg/L. The highest reported cyanide concentration is approximately 3 orders of magnitude less than the ground water protection standard of 40 mg/L. Reported zinc concentrations ranged from less than 0.010 mg/L to 1.85 mg/L. The highest reported zinc concentration is approximately 3 orders of magnitude less than the ground water protection standard of 1,175 mg/L.

2.4. Isoconcentration maps

The laboratory reported concentrations for cadmium, cyanide, manganese, and nickel were used to construct isoconcentration maps

(Figures 2, 3, 4, and 5, respectively) for the shallow wells. Manganese concentrations were used to construct an isoconcentration map (Figure 6) for the deep wells. The reported laboratory values used were the higher of the reported values for 1999. Zinc data showed little significant variability except for second quarter at GMW #4S and was not used to construct isoconcentration maps. The remainder of the data were either at or below method detection limits (lead and mercury) or only had one or two data points (chromium). The isoconcentration maps and the tabulated data indicate that, in general, the highest concentrations (while still below ground water protection standards) tend to be in an area to the east and southeast of the former lagoon approximately bounded by a line through GMWs #2S, #3S, #3D, #3, and #9. Also, concentrations tend to reduce with depth, as supported by cadmium, nickel, and cyanide concentrations from the tabulated data.

2.5. Trend graphs

To replace the statistical analyses that were previously conducted on the quarterly ground water laboratory and field results, concentration trend graphs were developed, as suggested in MDNR's September 20, 1991 letter, to illustrate the potential concentration fluctuations of key parameters and key monitoring wells. This is the ninth ground water report to include trend graphs. Copies of the resultant graphs are shown in Appendix C (1995-1999) and Appendix D (1987-1995). The trend graphs illustrate the quarterly results of pH and total chromium, cyanide, manganese, nickel, sulfates, and zinc. Seven of the graphs illustrate the concentrations for the shallow wells - upgradient GMW #5S and downgradient wells GMW #4S and GMW #6S. The remaining seven graphs illustrate concentrations for the deep wells - upgradient GMW #5D and downgradient wells GMW #4D, GMW #6D, and GMW #9. The data assimilates first quarter 1987 through October 1999 data. During 1999, no adverse trends were indicated by the reported analyses. Trend graphs were assembled as time (horizontal axis) versus chemical constituent concentration (vertical axis). Data which were not shown were the fourth quarter 1987 data for cyanide in which the detection limits were much higher than the rest of the results and, therefore, would skew the range of results. In addition, prior to third quarter 1991, analytical results for metals were for ground water samples that had been field-filtered and, therefore, represented dissolved metal concentrations. After third quarter 1991, dissolved metals analyses were dropped, and total metals analyses were the only metals constituents monitored.

The plotting of the trend graphs suggests that a sampling or analytical anomaly occurred for GMW #5S and GMW #5D samples for metals during second quarter 1988. These results are illustrated on the trend graph as spikes (Appendix D). This was observed in chromium and

nickel concentrations in the shallow well samples and chromium, nickel, and zinc concentrations in the deep well samples.

With regard to the shallow well trend graphs, chromium, cyanide, manganese, nickel, zinc, and sulfates concentrations have generally been higher in downgradient GMW #4S than for GMW #5S (background well) and GMW #6S. The pH of GMW #4S has generally been observed lower than for GMW #5S and GMW #6S.

With respect to the deep wells, the chromium and nickel concentrations of GMW #9 have generally been higher than the chromium and nickel concentrations of GMW #5D (background well), GMW #6D, and GMW #4D. Manganese, sulfates, and zinc have generally been higher in either GMW #4D or GMW #9 than in GMW #5D and GMW #6D. The pH of the observed wells has shown the highest degree of variability. No one well is shown to be consistently higher or lower in pH values than the other wells. Cyanide has remained below detection limits since the second quarter 1991.

Trend graphs will be updated for subsequent annual ground water reports for the site by adding the ground water sample laboratory analytical data from the additional corresponding sampling events.

3. Ground water level data and calculations

3.1. Ground water elevations

Figures 7 through 10 of this report are potentiometric ground water surface elevation maps prepared from the 1999 ground water elevation data for the wells and include a table summarizing the ground water elevation measurements obtained during 1999 semi-annual sampling at the wells. In general, the ground water flow directions have fluctuated little from quarter to quarter. As in the past, the observed historical direction of the ground water flow is generally in an easterly to southeasterly direction, toward the One Hundred and Two River.

A comparison of 1998 ground water elevations to 1999 ground water elevations on a quarter-to-quarter basis (*i.e.*, second quarter 1998 compared to second quarter 1999, etc.) indicates ground water elevations for 1999 were lower than in 1998. Second quarter 1999 ground water elevations were as much as 2.25 ft lower than in second quarter 1998. Fourth quarter 1999 ground water elevations were as much as 3.55 ft lower than in fourth quarter 1998. Ground water elevations were as much as 5.17 ft lower in the fourth quarter 1999 as in the second quarter 1999. See tables 3-1 and 3-2, below.

Table 3-1 *Shallow well ground water elevations, 1998 and 1999.*

<i>Well</i>	<i>Second quarter</i>		<i>Fourth quarter</i>	
	<i>1998</i>	<i>1999</i>	<i>1998</i>	<i>1999</i>
GMW #2S	993.56	992.82	989.70	988.43
GMW #3	993.75	993.29	991.87	989.73
GMW #3S	992.77	992.27	989.70	988.04
GMW #4S	994.62	993.85	992.16	989.83
GMW #5S	997.26	997.64	995.93	992.98
GMW #6S	988.05	987.53	986.52	984.31
PZ-1	995.54	995.26	993.14	990.09
PZ-2	995.96	995.74	994.38	990.83
PZ-3	996.25	995.90	994.93	994.01
PZ-4	996.28	994.03	993.99	992.03

Source: O'Brien & Gere Engineers, Inc.

Table 3-2 Deep well ground water elevations, 1998 and 1999.

Well	Second quarter		Fourth quarter	
	1998	1999	1998	1999
GMW #2D	993.35	992.95	991.62	989.51
GMW #3D	992.02	991.54	990.00	988.28
GMW #4D	993.73	993.40	992.13	989.83
GMW #5D	995.04	994.91	993.47	990.76
GMW #6D	987.98	987.49	986.53	984.27
GMW #7	989.81	989.29	987.41	984.30
GMW #9	993.43	993.09	991.85	989.61

Source: O'Brien & Gere Engineers, Inc.

3.2. Horizontal ground water migration

The ground water flow velocity has been estimated for the shallow and deep well zones using a modified Darcy's Law expression to calculate lineal velocity:

$$V = \frac{Ki}{7.48 Sy}$$

Where V = average lineal velocity, ft/day
 K = hydraulic conductivity, gpd/ft²
 i = average hydraulic gradient, ft/ft
 Sy = estimated effective porosity

Table 3-3, site hydraulic gradients, and Table 3-4, hydraulic conductivities, were used to estimate the ground water velocities for the upper silt zone and the lower sand zone. A specific yield, Sy (or effective porosity) of 0.18 was used for the silt zone and an Sy of 0.25 was used for the sand zone. The hydraulic gradient was calculated using the differences in hydraulic head between wells GMW #5S and GMW #6S with a horizontal distance between them of 1395 ft for the shallow wells. GMW #5D and GMW #6D, with a horizontal distance between them of 1395 ft, was used to calculate the hydraulic gradients for the deeper wells. A hydraulic gradient was calculated for each semi-annual sampling event, then those two numbers were averaged.

Table 3-3. Site hydraulic gradients (I).

Shallow wells (d = 1395 ft)				
Quarter	5S (msl elev.)	6S (msl elev.)	5S-6S	I (ft/ft)
2	997.64	987.53	10.11	0.0072
4	992.98	984.31	8.67	0.0062
Average gradient (I_s) = 0.0067 ft/ft				
Deep wells (d = 1395 ft)				
Quarter	5D (msl elev.)	6D (msl elev.)	5D-6D	I (ft/ft)
2	994.91	987.49	7.42	0.0053
4	990.76	984.27	6.49	0.0047
Average gradient (I_D) = 0.005 ft/ft				
Source: O'Brien & Gere Engineers, Inc.				

Table 3-4. Hydraulic conductivities (K).

Shallow wells	K (gpd/ft ²)	Deep wells	K (gpd/ft ²)
2S	5.1	2D	9.2
3	8.16	4D	5.6
4S	1.64	5D	10.1
5S	1.95	6D	47.0
6S	14.5	7	7.4
Low K = 1.64		Low K = 5.6	
High K = 14.5		High K = 47	
Average K = 6.27		Average K = 15.86	

$V = \frac{KI}{7.48 (Sy)}$

Sy for silt = 0.18.

Sy for sand = 0.25

Upper zone is generally silts.

Lower zone is generally sands and some gravel mix.

Source: O'Brien & Gere Engineers, Inc.

Hydraulic conductivities were based upon *in situ* permeability tests performed in November 1985. Table 3-4 summarizes the hydraulic conductivities for the shallow (silt zone) wells, the deeper (sand zone) wells, and the low, high, and average values for each respective zone.

Table 3-5 summarizes the calculated ground water flow velocities for the shallow zone (silt) and deeper zone (sand). The shallow zone has an approximately 50% lower flow velocity than the sand zone when comparing low to low and high to high. However, when averaged, the flow velocity within the silt zone is approximately 85% of that of the sand zone. This tends to confirm the variability in the makeup of the silt

and sand and the variability of the completion depths of the monitoring wells.

Table 3-5. *Ground water velocities.*

	Silt zone	Sands and gravel zone
Low	2.98 ft/yr	5.15 ft/yr
High	26.34 ft/yr	45.87 ft/yr
Average	11.39 ft/yr	15.47 ft/yr

Source: O'Brien & Gere Engineers, Inc.

3.3. Vertical ground water migration

Table 3-6 presents the 1999 ground water elevation data for the nested well pairs and the difference in elevation between shallow and corresponding deep monitoring wells.

If the ground water elevation in the deep well is higher than in the corresponding shallow well, the hydraulic head in the deep well is higher than in the shallow well. Hence, an upward flow potential exists. Conversely, if the ground water elevation in the shallow well is higher than in the corresponding deep well, the hydraulic head in the shallow well is higher than in the deep well. In this case, a downward flow potential exists.

GMW #2S/#2D had an upward flow potential during the second and fourth quarters of 1999. GMW #3S/3D had a downward flow potential during the second quarter of 1999 and an upward flow potential during the fourth quarter 1999. GMW #4S/4D had a downward flow potential during the second quarter 1999 and a neutral potential during the fourth quarter 1999. GMW #5S/5D had downward flow potentials for the second and fourth quarters of 1999. GMW #6S/6D had a downward vertical flow potential for the second and fourth quarters 1999.

Table 3-6 *Vertical ground water flow potential; 1999 elevation data.*

Shallow wells	Ground water elevation	Deep wells	Ground water elevation	Shallow-deep elevation	
2S	992.82	2D	992.95	-0.13	↑
	988.43		989.51	-1.08	↓
3S	992.27	3D	991.54	0.73	↓
	988.04		988.28	-1.79	↑
4S	993.85	4D	993.40	0.45	↓
	989.83		989.83	0.0	---
5S	997.64	5D	994.91	2.73	↓
	992.98		990.76	2.22	↓
6S	987.53	6D	987.49	0.04	↓
	984.31		984.27	0.04	↓

↑↓ - direction of apparent relative vertical flow component potential
Source: O'Brien & Gere Engineers, Inc.

4. Conclusions

Based on the 1999 quarterly field activities, ground water elevation data, laboratory analytical results, and well inspection activities performed, the following conclusions are made:

1. Regional and site ground water flow direction remains primarily in an east to southeast direction toward the One Hundred Two River.
2. Except as noted for hexavalent chromium, analytical results and their respective quality assurance/quality control measures did not indicate the existence of anomalies or inconsistencies that would affect the assessment of the analytical results.
3. Analytical data indicate no well had reported concentrations above the post-closure permit ground water protection standards.
4. Observations were made of the ground water monitoring wells' surface condition as part of the quarterly sampling activities. During 1999, the ground water monitoring wells' seals and integrity remained intact.
5. Reviewing existing 1999 data, reports, and corresponding field activities, it appears the current ground water monitoring system continues to adequately define the ground water quality and conditions surrounding the former surface impoundment.
6. 1999 analytical data indicate no adverse change in ground water conditions.

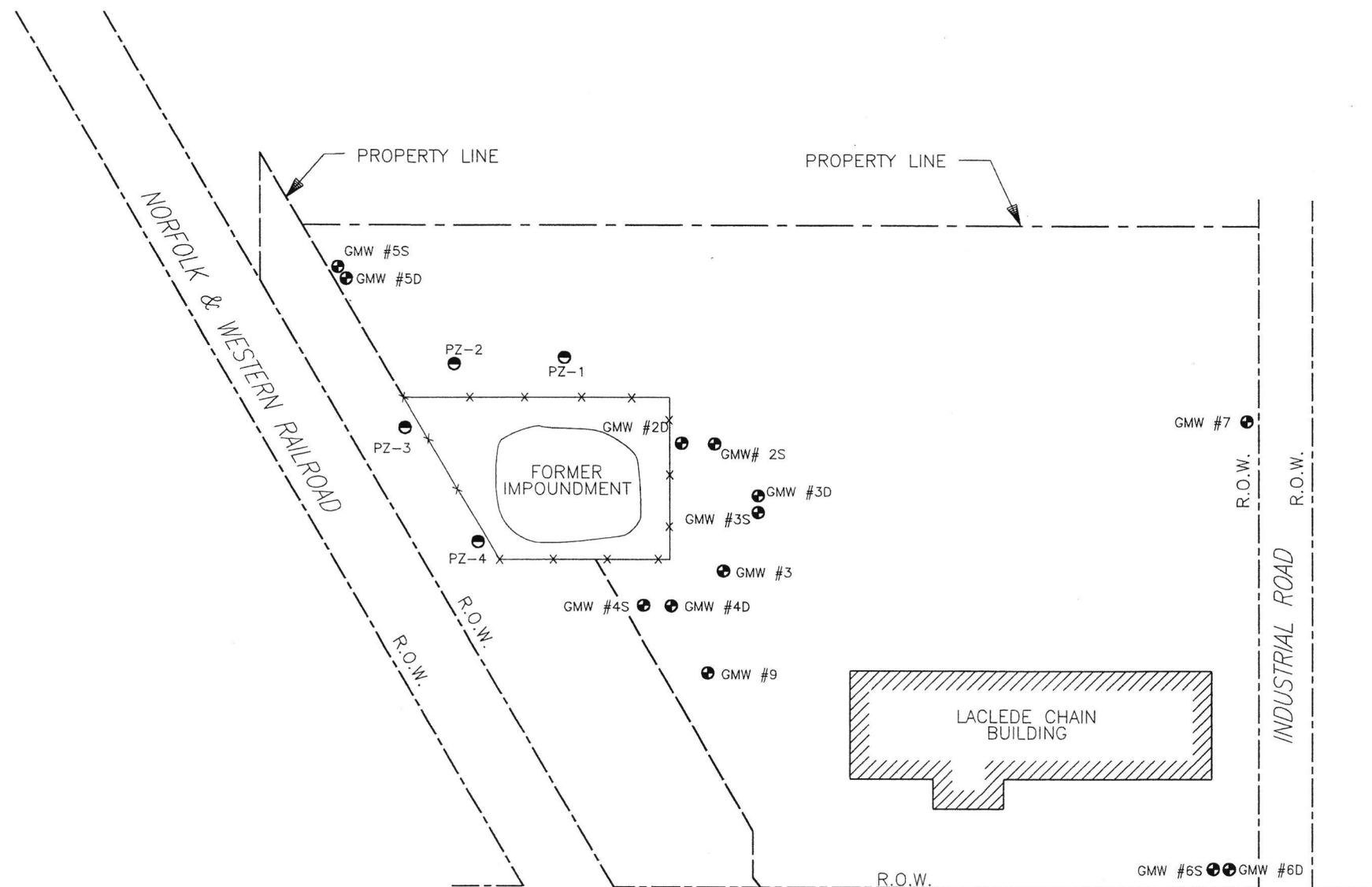


FIGURE 1



LEGEND

- GROUND WATER MONITORING WELL
- PIEZOMETER

INLAND REALTY COMPANY
MARYVILLE, MISSOURI

GROUND WATER
MONITORING WELL
LOCATION PLAN

5/4/99
3050.005-109F

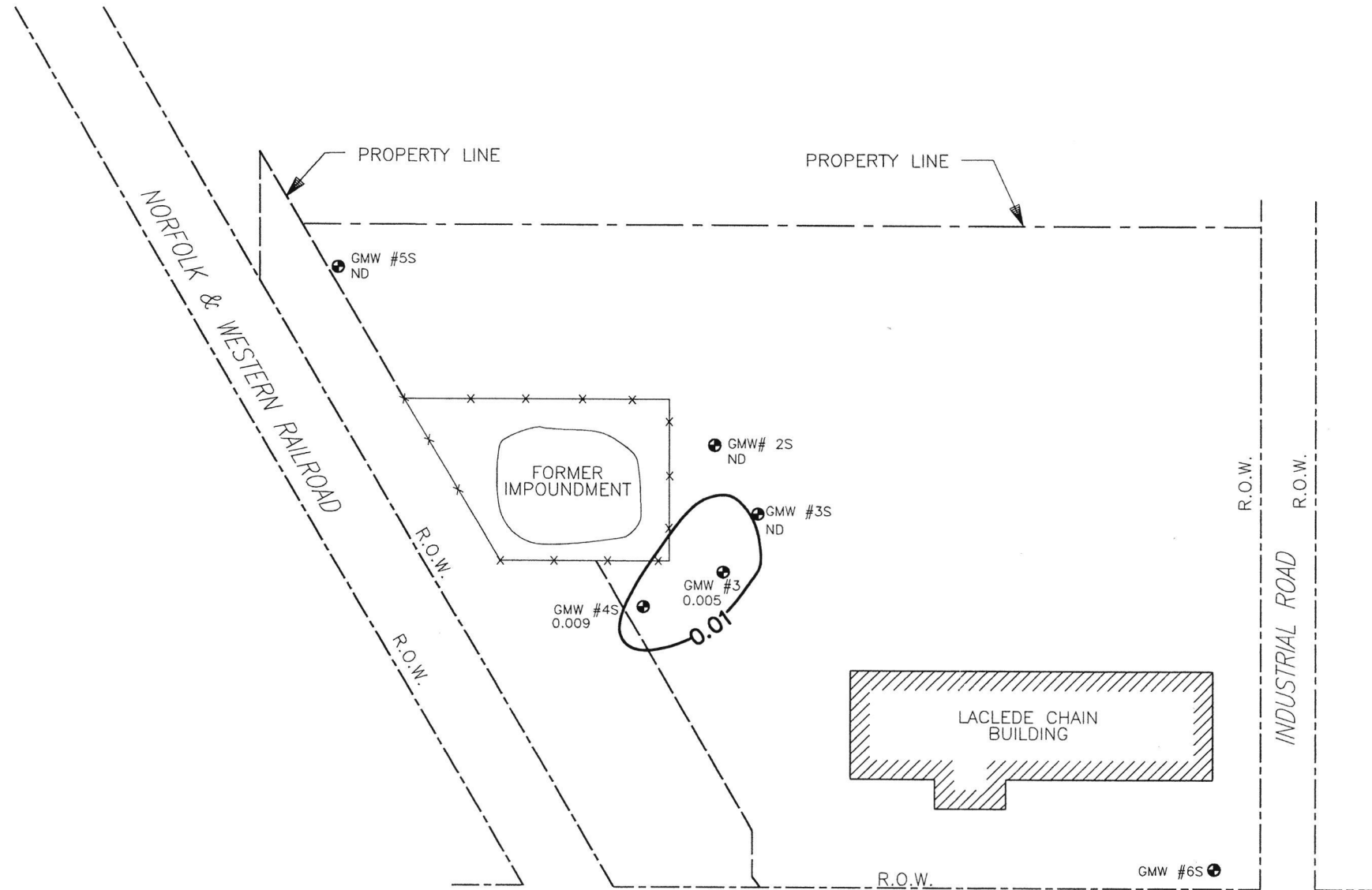


FIGURE 2



LEGEND

- GROUND WATER MONITORING WELL
- ND NONDETECT
- 0.01 REPORTED CONCENTRATION MG/L

INLAND REALITY COMPANY
MARYVILLE, MISSOURI

CADMIUM
ISOCONCENTRATION MAP
SHALLOW WELLS

3050.005-208
FEBRUARY, 2000



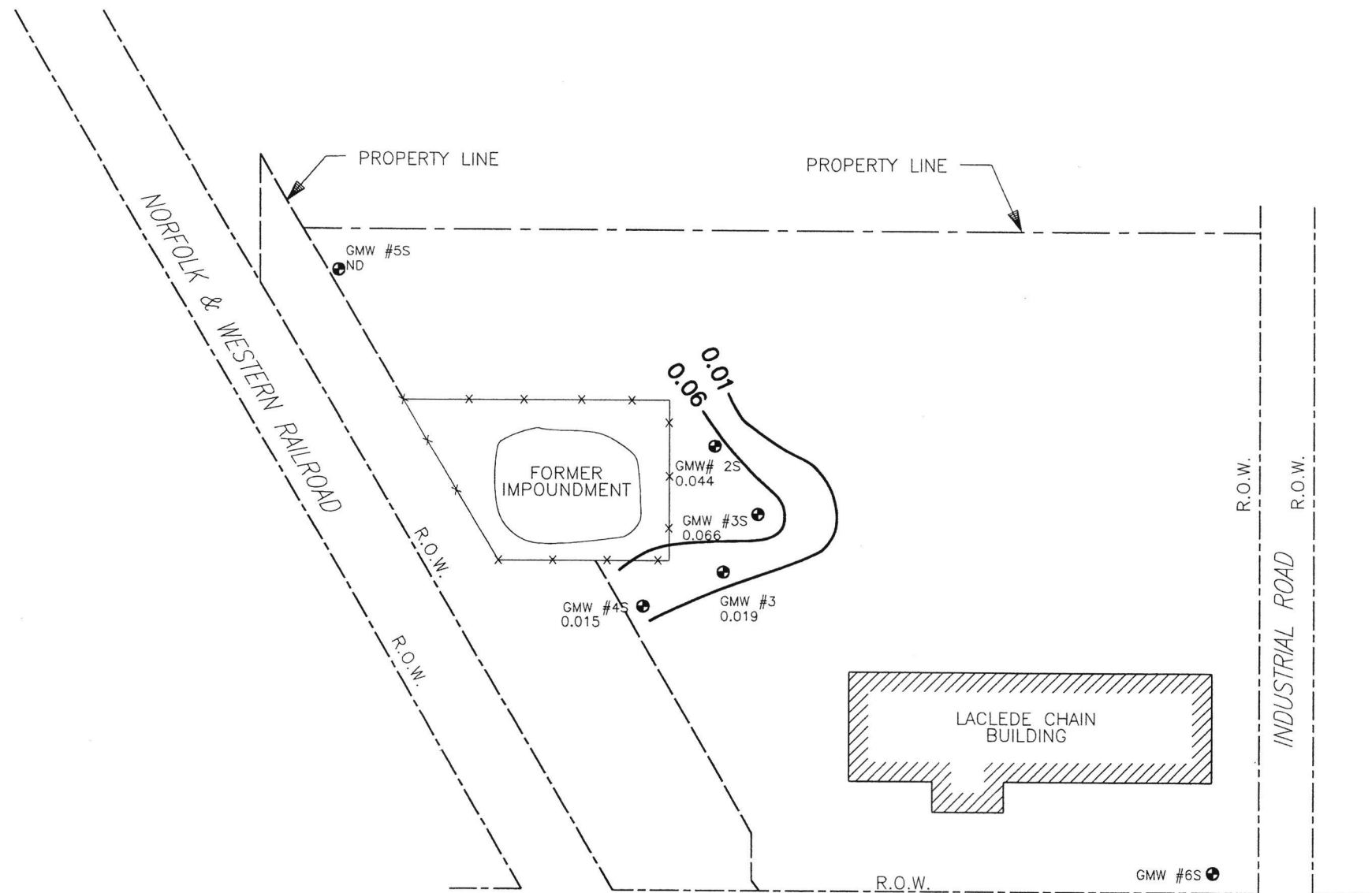


FIGURE 3



LEGEND

- GROUND WATER MONITORING WELL
- ND NONDETECT
- 0.01 REPORTED CONCENTRATION MG/L

INLAND REALTY COMPANY
MARYVILLE, MISSOURI

CYANIDE
ISOCONCENTRATION MAP
SHALLOW WELLS

3050.005-209
FEBRUARY, 2000

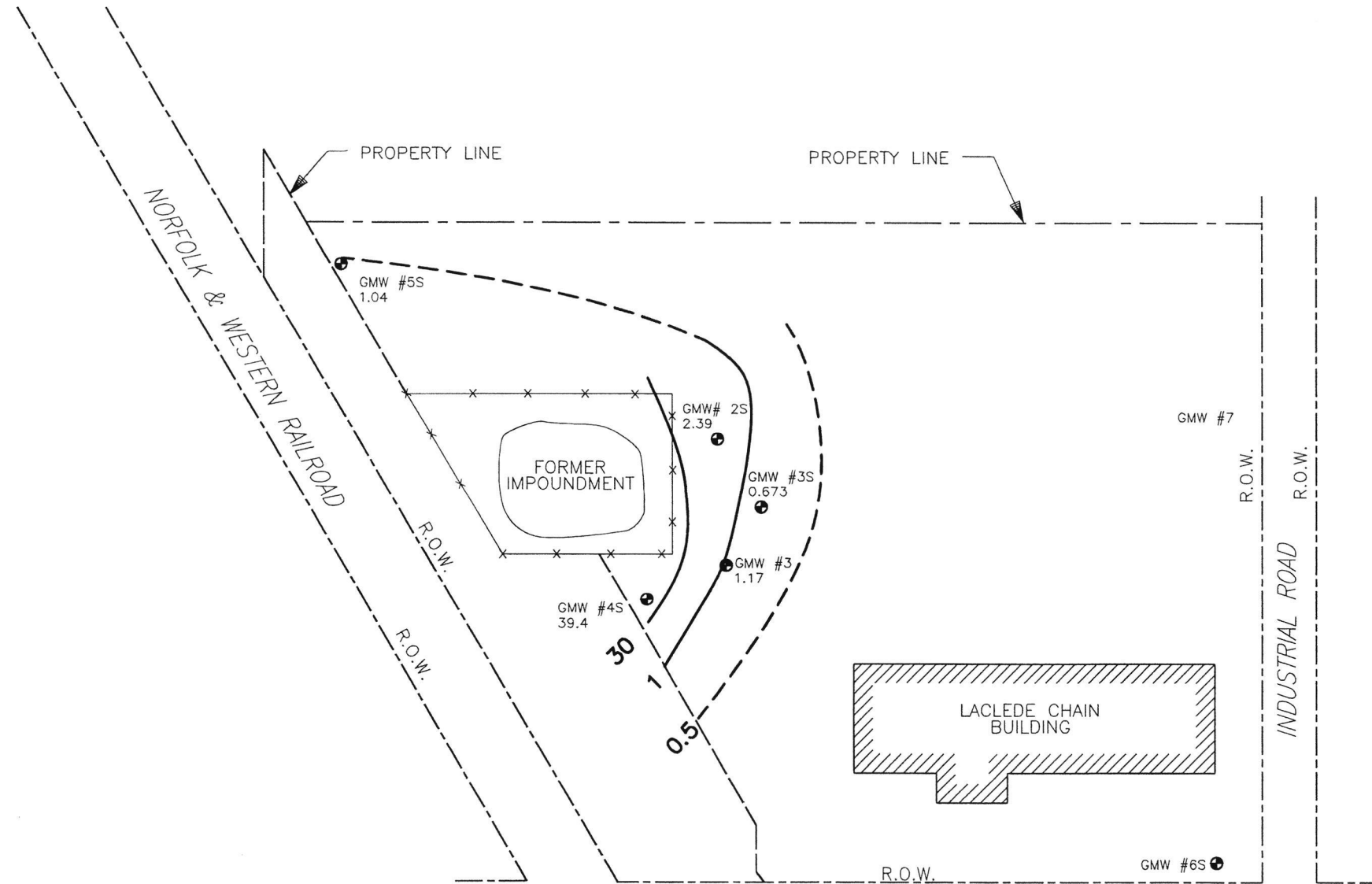


FIGURE 4



LEGEND

- GROUND WATER MONITORING WELL
- ND NONDETECT
- 0.5 REPORTED CONCENTRATION MG/L

INLAND REALTY COMPANY
MARYVILLE, MISSOURI

MANGANESE
ISOCONCENTRATION MAP
SHALLOW WELLS

3050.005.210
FEBRUARY, 2000



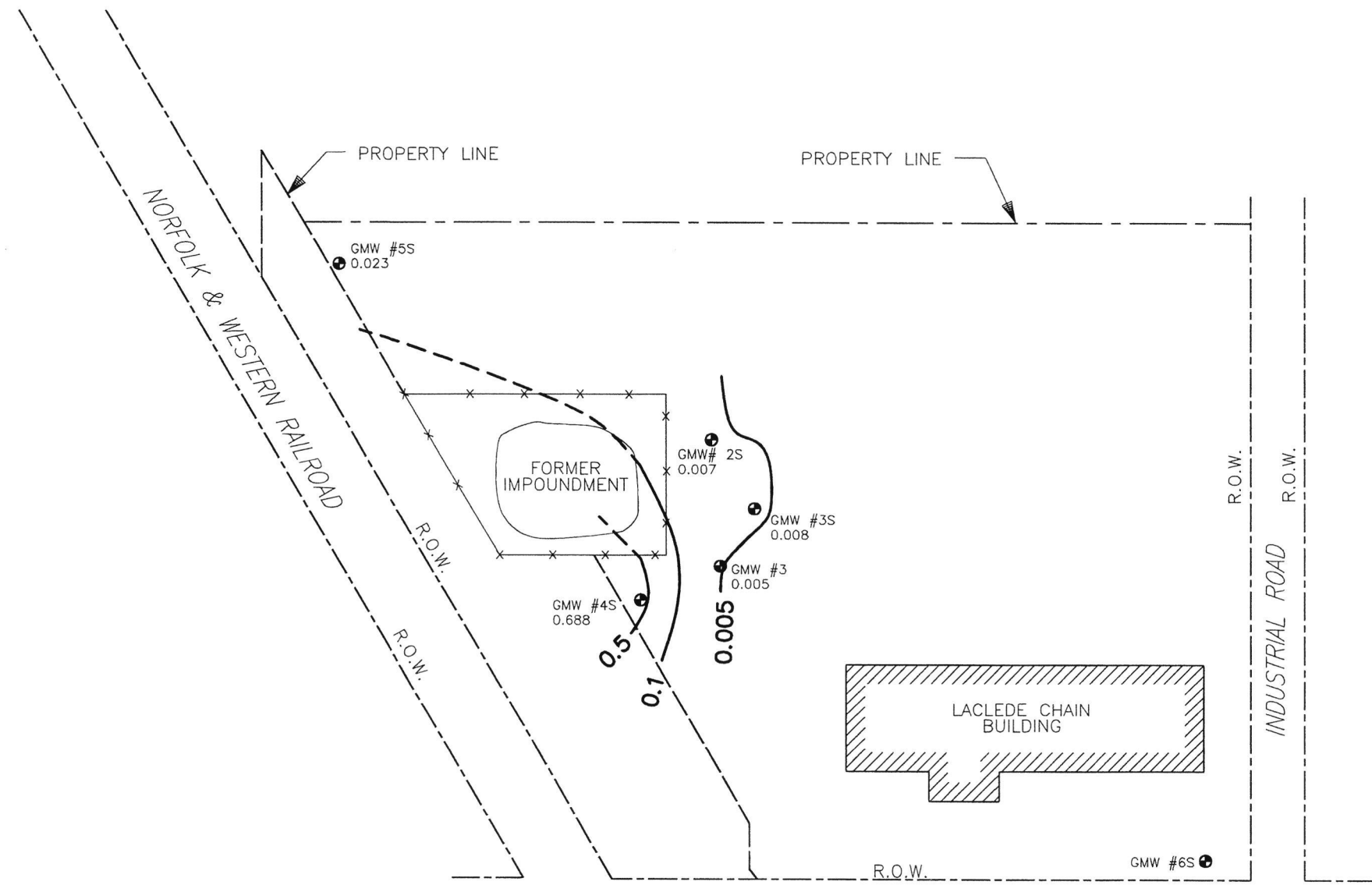


FIGURE 5



LEGEND

- GROUND WATER MONITORING WELL
- ND NONDETECT
- 0.1 — REPORTED CONCENTRATION MG/L

INLAND REALTY COMPANY
MARYVILLE, MISSOURI

**NICKEL
ISOCONCENTRATION MAP
SHALLOW WELLS**

3050.005-212
FEBRUARY, 2000



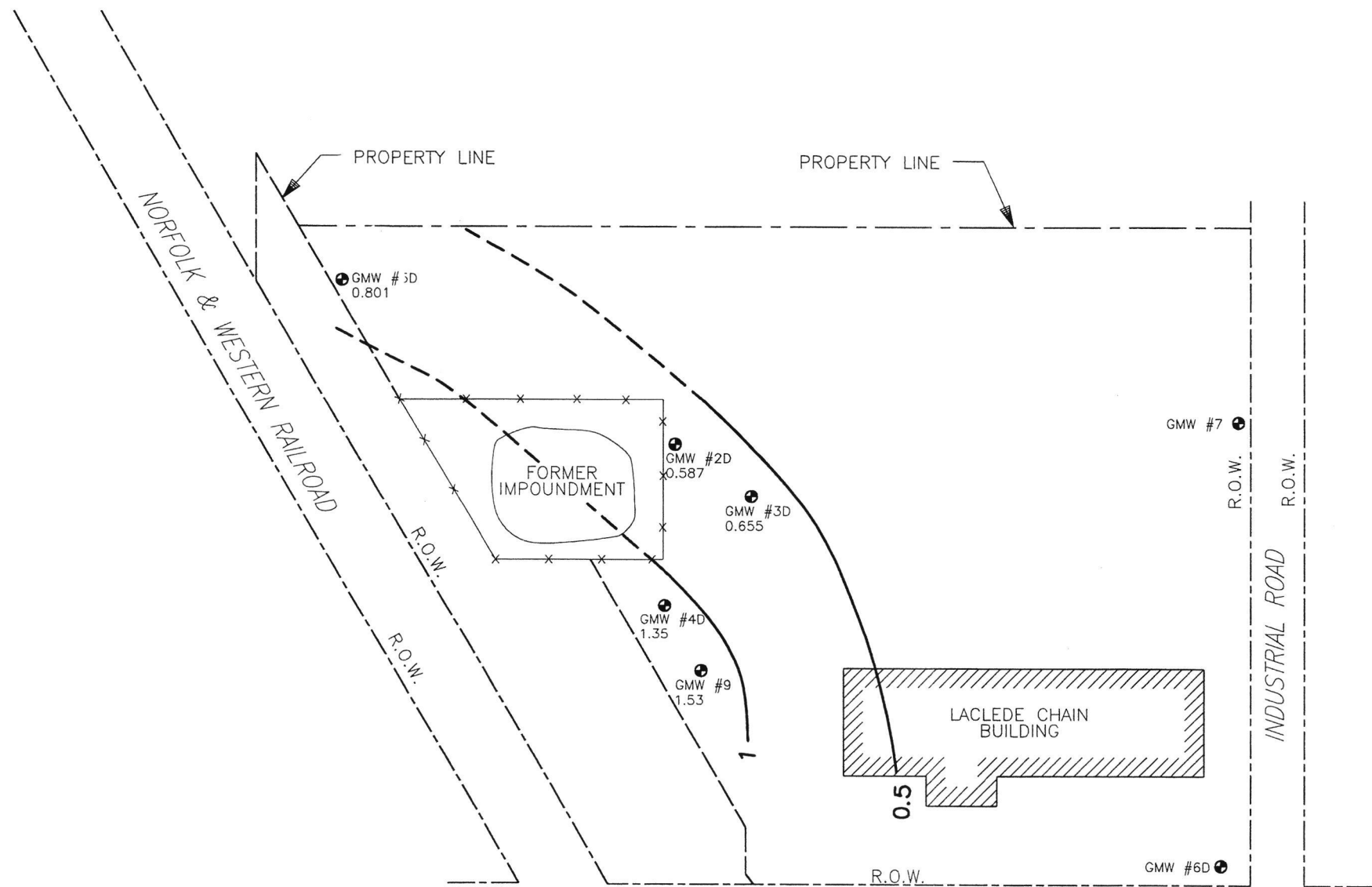


FIGURE 6



LEGEND

- GROUND WATER MONITORING WELL
- ND NONDETECT
- 0.5 REPORTED CONCENTRATION MG/L

INLAND REALTY COMPANY
MARYVILLE, MISSOURI

MANGANESE
ISOCONCENTRATION MAP
DEEP WELLS

3050.005-211
FEBRUARY, 2000

WELL NO.	DEPTH TO G.W.	ELEV. T.O.C.	G.W. ELEV.
2S	5.72	998.54	992.82
3	3.12	996.41	993.29
3S	5.40	997.67	992.27
4S	4.04	997.89	993.85
5S	5.61	1003.25	997.64
6S	4.89	992.42	987.53
P1	6.40	1001.66	995.26
P2	6.23	1001.97	995.74
P3	6.62	1002.52	995.90
P4	8.34	1002.37	994.03

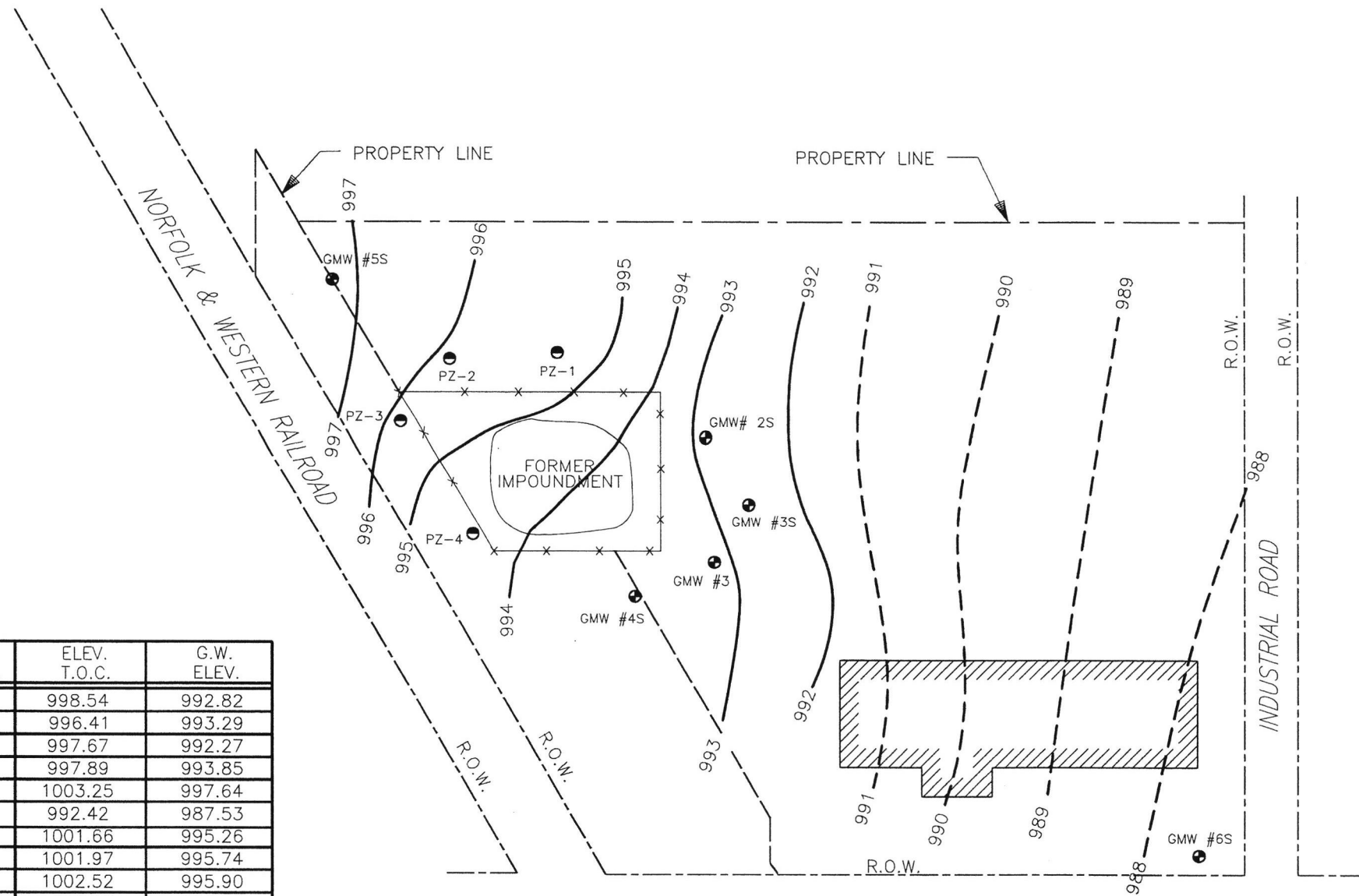


FIGURE 7



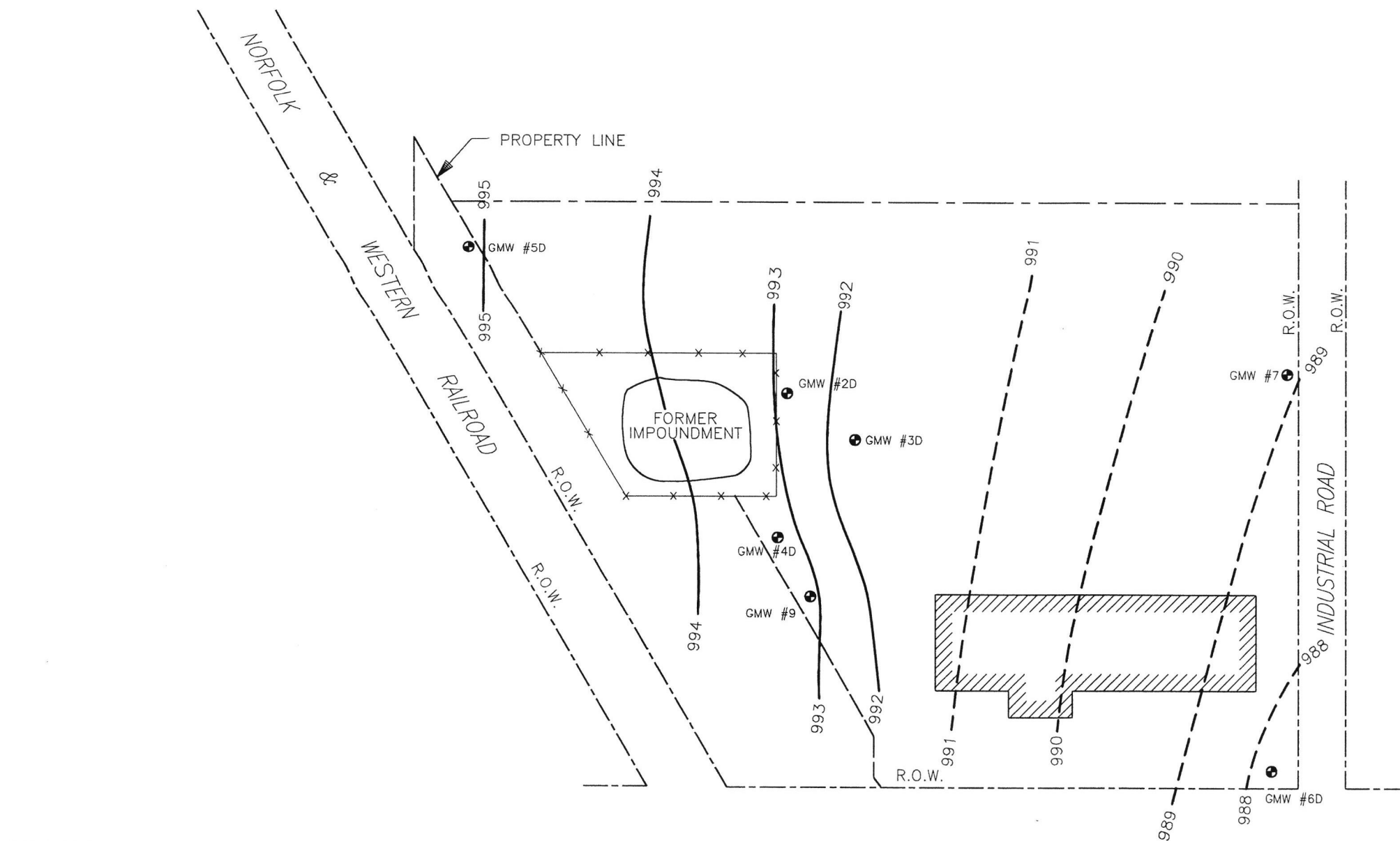
LEGEND

- 990 — INFERRED GROUND WATER ELEVATION CONTOUR LINE
- GROUND WATER MONITORING WELL
- PIEZOMETER

INLAND REALTY COMPANY
MARYVILLE, MISSOURI
SECOND QUARTER 1999
SHALLOW WELLS

GROUND WATER ELEVATION
CONTOUR MAP

3050.005-202
FEBRUARY, 2000



WELL NO.	DEPTH TO G.W.	ELEV. T.O.C.	G.W. ELEV.
2D	5.47	998.42	992.95
3D	6.17	997.71	991.54
4D	5.85	999.25	993.40
5D	8.34	1003.25	994.91
6D	4.98	992.47	987.49
7	5.13	994.42	989.29
9	4.25	997.34	993.09

FIGURE 8



LEGEND

- 990 — INFERRED GROUND WATER ELEVATION CONTOUR LINE
- GROUND WATER MONITORING WELL

INLAND REALTY COMPANY
MARYVILLE, MISSOURI
SECOND QUARTER 1999
DEEP WELLS

GROUND WATER ELEVATION
CONTOUR MAP

3050.005-203
FEBRUARY, 2000

WELL NO.	DEPTH TO G.W.	ELEV. T.O.C.	G.W. ELEV.
2S	10.11	998.54	988.43
3	6.68	996.41	989.73
3S	9.63	997.67	988.04
4S	8.06	997.89	989.83
5S	10.27	1003.25	992.98
6S	8.11	992.42	984.31
P1	11.57	1001.66	990.09
P2	11.14	1001.97	990.83
P3	8.51	1002.52	994.01
P4	10.34	1002.37	992.03

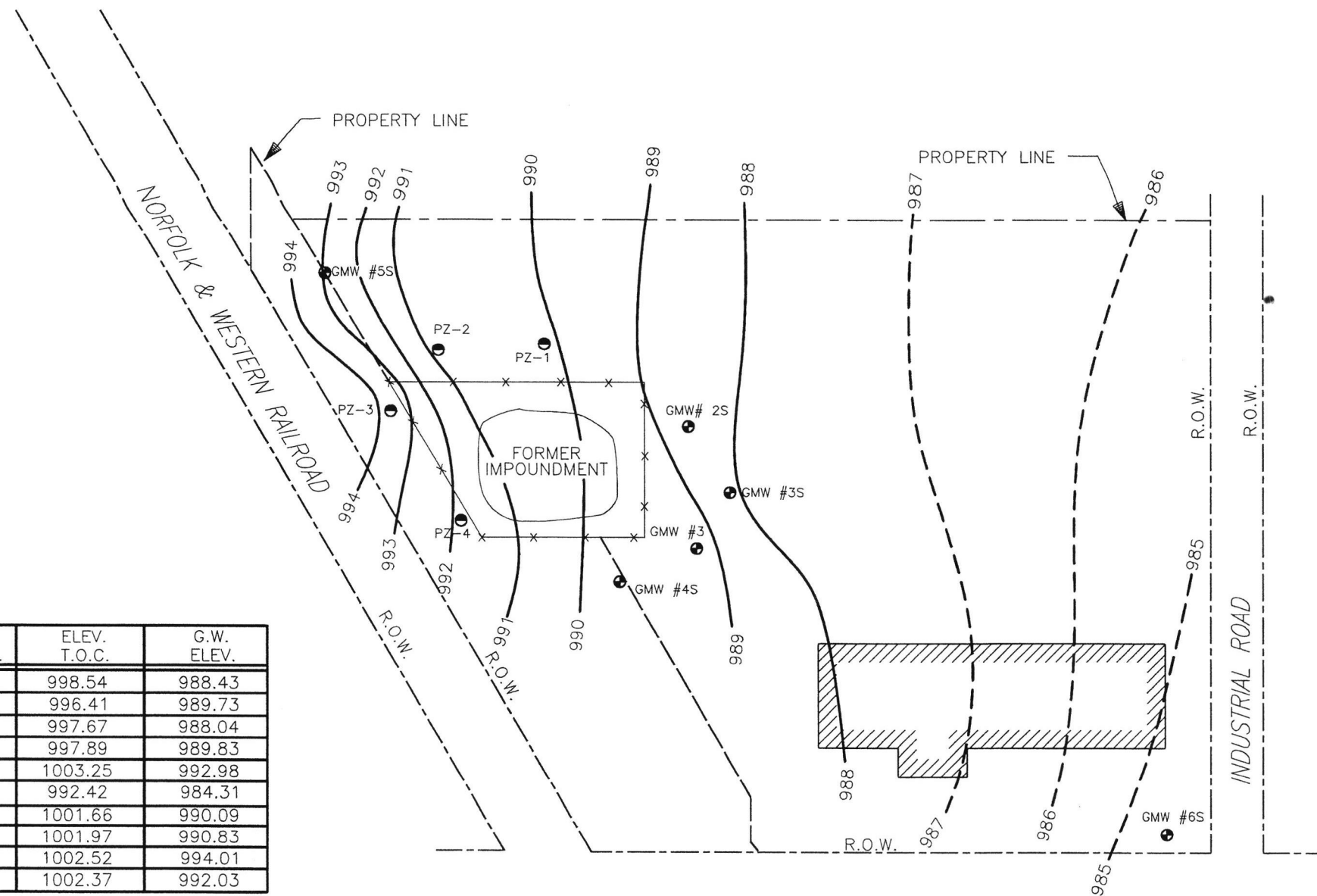


FIGURE 9



LEGEND

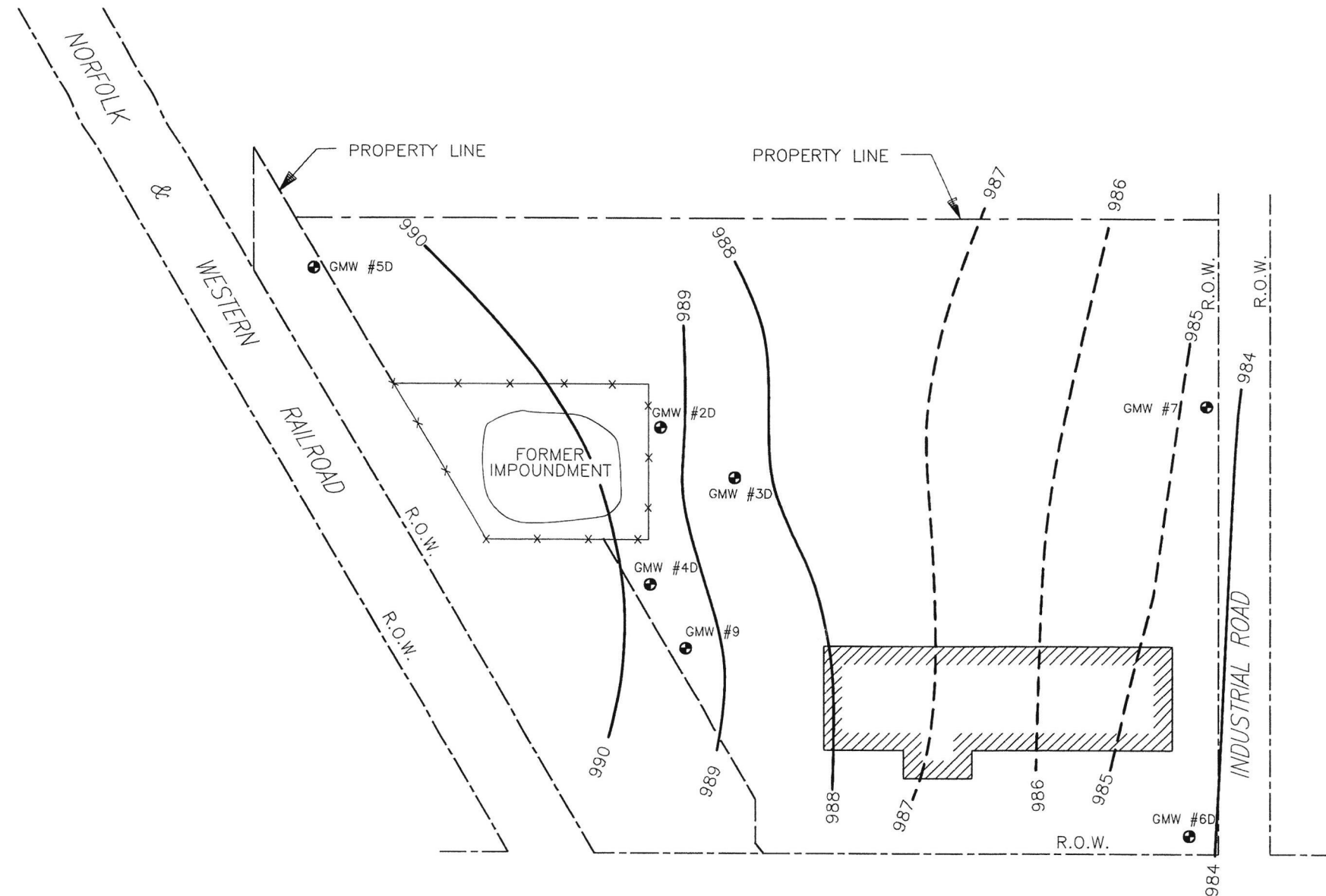
- 990 — INFERRED GROUND WATER ELEVATION CONTOUR LINE
- GROUND WATER MONITORING WELL
- PIEZOMETER

INLAND REALTY COMPANY
MARYVILLE, MISSOURI
FOURTH QUARTER 1999
SHALLOW WELLS

GROUND WATER ELEVATION
CONTOUR MAP

3050.005-206
FEBRUARY, 2000

WELL NO.	DEPTH TO G.W.	ELEV. T.O.C.	G.W. ELEV.
2D	8.91	998.42	989.51
3D	9.43	997.71	988.28
4D	9.42	999.25	989.83
5D	12.49	1003.25	990.76
6D	8.20	992.47	984.27
7	10.12	994.42	984.30
9	7.73	997.34	989.61



LEGEND

990 — INFERRED GROUND WATER ELEVATION CONTOUR LINE

● GROUND WATER MONITORING WELL

INLAND REALTY COMPANY
MARYVILLE, MISSOURI
FOURTH QUARTER 1999
DEEP WELLS

**GROUND WATER ELEVATION
CONTOUR MAP**

Appendix A

Ground water sampling field logs

Date: 4/20, 23/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: very cloudy, rainy, cool
 Well Number: GMW-2S
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 21.75 ft.
 Depth to Water * 5.72 ft.
 Length of Water Column 16.03 ft.
 Volume of Water in Well 10.5 gal.(s)
 3X Volume of Water in Well 31.5 gal.(s)

Water Volume /ft. for:
 2" Diameter Well = 0.163 X LWC
 X 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 30/40 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading

initial 58.9
 after 10 (gal.) 58.1
 after 20 (gal.) 57.2
 after 30 (gal.) 57.3
 after 40 (gal.) 57
 after (gal.)

pH Reading

4.0 Standard 93.99
 7.0 Standard 7.03
 10.0 Standard NH
 initial 6.57
 after 10 (gal.) 6.64
 after 20 (gal.) 6.48
 after 30 (gal.) 6.54
 after 40 (gal.) 6.53
 after (gal.)

Conductivity Reading

84 S Standard NH
 1413 S Standard 1410
 initial 1313
 after 10 (gal.) 1275
 after 20 (gal.) 1381
 after 30 (gal.) 1368
 after 40 (gal.) 1436
 after (gal.)

Water Sample: 4/21/99, 1430 Hex Cr.
 Time Collected: 4/23/99, 0900 metal

Physical Appearance at Start

Color deep the rust red
 Odor rust
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color red stain
 Odor rust
 Turbidity (> 100 NTU's) yes
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12.4	C	
500 ml	plastic	1	no	none	4	C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes Y No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 998.54
 Depth to Ground Water: 5.72
 Ground Water Elevation: 992.82

Date: 4/20, 23/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast, rainy
 Well Number: GMW-2D
 Project Number: 3050 "005"
 Evacuation Method: bailey

Depth of Well * 32.06 ft.
 Depth to Water * 5.87 ft.
 Length of Water Column 26.59 ft.
 Volume of Water in Well 43 gal.(s)
 3X Volume of Water in Well 13 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 15/20 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading		pH Reading		Conductivity Reading	
		4.0 Standard	<u>4.02</u>	84 S Standard	<u>NA</u>
		7.0 Standard	<u>7.01</u>	1413 S Standard	<u>1417</u>
		10.0 Standard	<u>N/A</u>	initial	<u>902</u>
	initial <u>59.1</u>	initial	<u>6.53</u>	after <u>5</u> (gal.)	<u>901</u>
after <u>5</u> (gal.)	<u>59.2</u>	after <u>5</u> (gal.)	<u>6.49</u>	after <u>10</u> (gal.)	<u>889</u>
after <u>10</u> (gal.)	<u>58.9</u>	after <u>10</u> (gal.)	<u>6.46</u>	after <u>15</u> (gal.)	<u>888</u>
after <u>15</u> (gal.)	<u>59.2</u>	after <u>15</u> (gal.)	<u>6.42</u>	after <u>20</u> (gal.)	<u>945</u>
after <u>20</u> (gal.)	<u>52.6</u>	after <u>20</u> (gal.)	<u>6.8</u>		
after <u> </u> (gal.)		after <u> </u> (gal.)			

Water Sample: 4/21/99, 1440 Hex Cr
 Time Collected: 4/23/99, 518, Metals

Physical Appearance at Start

Color clear, then rust red
 Odor rust
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color red stained
 Odor rust
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 998.42'
 Depth to Ground Water: 5.47
 Ground Water Elevation: 992.95

Date: 4/23/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast & rainy, cool
 Well Number: GMW-3
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 18.50 ft.
 Depth to Water * 3.12 ft.
 Length of Water Column 15.38 ft.
 Volume of Water in Well 70 gal.(s)
 3X Volume of Water in Well 30 gal.(s)

Water Volume /ft. for:
 2" Diameter Well = 0.163 X LWC
 X 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 30/40 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading
 initial 10.9°C
 after 10 (gal.) 11.1
 after 20 (gal.) 11.7
 after 30 (gal.) 12.1
 after 40 (gal.) 11.2
 after (gal.)

pH Reading
 4.0 Standard 4.0
 7.0 Standard 7.0
 10.0 Standard N/A
 initial 6.7
 after 10 (gal.) 6.7
 after 20 (gal.) 6.6
 after 30 (gal.) 6.6
 after 40 (gal.) 6.7
 after (gal.)

Conductivity Reading
 84 S Standard N/A
 1413 S Standard 1130/13°C
 initial 987
 after 10 (gal.) 1024
 after 20 (gal.) 1002
 after 30 (gal.) 993
 after 40 (gal.) 987
 after (gal.)

Water Sample: 4/21/99 13:40 Hex Cr
 Time Collected: 4/23/99 11:05 Metals

Physical Appearance at Start

Color gray stained
 Odor stinky
 Turbidity (> 100 NTUs) 205
 Sheen/Free Product 1W

Physical Appearance at Sampling

Color gray stained to clear
 Odor none
 Turbidity (> 100 NTU's) 20
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 996.41
 Depth to Ground Water: 3.12
 Ground Water Elevation: 993.29

Date: 4/20-23/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast to rainy, cool
 Well Number: GMW-3S
 Project Number: 3050 "005"
 Evacuation Method: bailey

Depth of Well * 23.61 ft.
 Depth to Water * 5.40 ft.
 Length of Water Column 18.21 ft.
 Volume of Water in Well 3 gal.(s)
 3X Volume of Water in Well 9 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 9/12 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading

initial 11.3
 after 3 (gal.) 10.8
 after 6 (gal.) 11.2
 after 9 (gal.) 11.1
 after 12 (gal.) 9.9
 after (gal.)

pH Reading

4.0 Standard 4.0
 7.0 Standard 7.0
 10.0 Standard NA
 initial
 after 3 (gal.) 6.5
 after 6 (gal.) 6.6
 after 9 (gal.) 6.5
 after 12 (gal.) 6.5
 after (gal.)

Conductivity Reading

84 S Standard NA
 1413 S Standard 17980 17°C
 initial 1144
 after 3 (gal.) 1130
 after 6 (gal.) 1169
 after 9 (gal.) 1174
 after 12 (gal.) 1107
 after (gal.)

Water Sample: 4/21/99, 14:10 Hex Cr
 Time Collected: 4/23/99, 0950 Metals

Physical Appearance at Start

Color gray
 Odor disinfectant
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTU's) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes X No
 Well covers and locks in good condition and secure?.....Yes X No
 Is the well stand pipe vertically aligned and secure?.....Yes X No
 Is the concrete pad and surface seal in good condition?.....Yes X No
 Are soils surrounding the well pad eroded?.....Yes No X
 Is the PVC well casing in good condition?.....Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes No X
 Is the stand pipe vented at the base to provide drainage?.....Yes X No
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes X No

NOTES: Top of casing elevation: 997.67
 Depth to Ground Water: 5.40
 Ground Water Elevation: 992.27

Date: 4/20-23/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast to sunny
 Well Number: GMW-3D
 Project Number: 3050 "005"
 Evacuation Method: bailey

Depth of Well * 36.66 ft.
 Depth to Water * 6.17 ft.
 Length of Water Column 30.49 ft.
 Volume of Water in Well 5 gal.(s)
 3X Volume of Water in Well 15 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 15/20 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading

initial 6.6 10.6
 after 5 (gal.) 6.6 11.7
 after 10 (gal.) 6.7
 after 15 (gal.) 6.4 12.2
 after 20 (gal.) 6.4 11.6
 after (gal.)

pH Reading

4.0 Standard 4.02
 7.0 Standard 7.04
 10.0 Standard N/A
 initial 6.6
 after 5 (gal.) 6.6
 after 10 (gal.) 6.5
 after 15 (gal.) 6.4
 after 20 (gal.) 6.4
 after (gal.)

Conductivity Reading

84 S Standard N/A
 1413 S Standard 1398
 initial 759
 after 5 (gal.) 783
 after 10 (gal.) 775
 after 15 (gal.) 775
 after 20 (gal.) 881
 after (gal.)

Water Sample: 4/21/99, 14:20, Hex Cr
 Time Collected: 4/23/99, 10:25 Metals

Physical Appearance at Start

Color gray stain
 Odor none dirt
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product yes

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTU's) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 997.71
 Depth to Ground Water: 6.17
 Ground Water Elevation: 991.54

Date: 4/20-23/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast to rainy, cool
 Well Number: GMW-4S
 Project Number: 3050 "005"
 Evacuation Method: bailey

Depth of Well * 20.48 ft.
 Depth to Water * 4.04 ft.
 Length of Water Column 16.44 ft.
 Volume of Water in Well 11 gal.(s)
 3X Volume of Water in Well 33 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 12.5/17.5 gal.(s)
 Did well go dry? Yes X No

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading
 initial 12.8
 after 11 (gal.) 12.2
 after 12.5 (gal.) 12.0
 after 17.5 (gal.) 12.2
 after (gal.)
 after (gal.)

pH Reading
 4.0 Standard 9.0
 7.0 Standard 7.01
 10.0 Standard NA
 initial 5.9
 after 11 (gal.) 6.1
 after 12.5 (gal.) 6.1
 after 17.5 (gal.) 6.1
 after (gal.)
 after (gal.)

Conductivity Reading
 84 S Standard NA
 1413 S Standard 1417
 initial 1936
 after 11 (gal.) 1924
 after 12.5 (gal.) 1924
 after 17.5 (gal.) 1957
 after (gal.)
 after (gal.)

Water Sample: 4/21/99 1350 Hex Cr
 Time Collected: 4/23/99 1210 Metals

Physical Appearance at Start

Color gray
 Odor not
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color gray stain
 Odor not
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12.4	C	
500 ml	plastic	1	no	none	4	C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 997.89
 Depth to Ground Water: 4.04
 Ground Water Elevation: 993.85

Date: 4/20-23/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast to rainy
 Well Number: GMW-4D
 Project Number: 3050 "005"
 Evacuation Method: bailer

Depth of Well * 37.09 ft.
 Depth to Water * 5.85 ft.
 Length of Water Column 31.24 ft.
 Volume of Water in Well 5 gal.(s)
 3X Volume of Water in Well 15 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 15/20 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading

initial 11.8
 after 5 (gal.) 12.8
 after 10 (gal.) 13.3
 after 15 (gal.) 13.1
 after 20 (gal.) 13.2
 after (gal.)

pH Reading

4.0 Standard 4.0
 7.0 Standard 7.0
 10.0 Standard 10.4
 initial 6.6
 after 5 (gal.) 6.6
 after 10 (gal.) 6.9
 after 15 (gal.) 6.3
 after 20 (gal.) 6.5
 after (gal.)

Conductivity Reading

84 S Standard NA
 1413 S Standard 1917
 initial 1228
 after 5 (gal.) 1168
 after 10 (gal.) 972
 after 15 (gal.) 957
 after 20 (gal.) 954
 after (gal.)

Water Sample: 4/21/99-1400; Harder
 Time Collected: 4/23/99; 1140; metals

Physical Appearance at Start

Color gray tint
 Odor slight dirt
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTU's) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12.4	C	
500 ml	plastic	1	no	none	4	C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 999.25
 Depth to Ground Water: 5.85
 Ground Water Elevation: 993.40

Date: 4/20-22/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast to rain
 Well Number: GMW-5S
 Project Number: 3050 "005"
 Evacuation Method: bailer

Depth of Well * 23.83 ft.
 Depth to Water * 5.61 ft.
 Length of Water Column 18.22 ft.
 Volume of Water in Well 3 gal.(s)
 3X Volume of Water in Well 9 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 9/2/18 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading
 initial 58.3
 after 3 (gal.) 55.3
 after 6 (gal.) 55.2
 after 9 (gal.) 56.0
 after 12 (gal.) 10.9°C
 after 18 (gal.) 10.6°C

pH Reading
 4.0 Standard 4.05
 7.0 Standard 6.99
 10.0 Standard NA
 initial 6.35
 after 3 (gal.) 6.33
 after 6 (gal.) 6.45
 after 9 (gal.) 6.48
 after 12 (gal.) 6.2
 after 18 (gal.) 6.2

Conductivity Reading
 84 S Standard NA
 1413 S Standard 1413
 initial 2460
 after 3 (gal.) 2430
 after 6 (gal.) 2470
 after 9 (gal.) 2460
 after 12 (gal.) 1265
 after 18 (gal.) 1281

Water Sample: 4/21/99, 1450, Hex Cr
 Time Collected: 4/22/99, 1515, Metals

Physical Appearance at Start

Color gray tint
 Odor slut
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12.4	C	
500 ml	plastic	1	no	none	4	C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 1003.25'
 Depth to Ground Water: 5.61
 Ground Water Elevation: 997.64

Date: 4/20-22/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast to rain
 Well Number: GMW-5D
 Project Number: 3050 "005"
 Evacuation Method: bailey

Depth of Well * 37.77 ft.
 Depth to Water * 5.34 ft.
 Length of Water Column 29.43 ft.
 Volume of Water in Well 4.8 gal.(s)
 3X Volume of Water in Well 15 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 15/30 gal.(s)
 Did well go dry? Yes X No X

*Measurements taken from ☒ Top of Well Casing

☐ Top of Protective Casing

(Other, Specify)

Water parameters:

Temperature Reading

initial 55.5
 after 5 (gal.) 57.3
 after 10 (gal.) 57.4
 after 15 (gal.) 57.5
 after 20 (gal.) 57.4
 after 30 (gal.) 57.4

pH Reading

4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial 6.94
 after _____ (gal.) 6.95
 after _____ (gal.) 6.66
 after _____ (gal.) 6.68
 after _____ (gal.) 6.72
 after _____ (gal.) 6.88

Conductivity Reading

84 S Standard _____
 1413 S Standard _____
 initial 1668
 after 5 (gal.) 1430
 after 10 (gal.) 1110
 after 15 (gal.) 950
 after 20 (gal.) 1250
 after 30 (gal.) 1240

Water Sample: 4/21/99; 1500; Hex Cr
 Time Collected: 4/22/99; 1600; Metals

Physical Appearance at Start

Color gray
 Odor dist
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12.4	C	
500 ml	plastic	1	no	none	4	C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No _____
 Well covers and locks in good condition and secure? Yes X No _____
 Is the well stand pipe vertically aligned and secure? Yes X No _____
 Is the concrete pad and surface seal in good condition? Yes X No _____
 Are soils surrounding the well pad eroded? Yes _____ No X
 Is the PVC well casing in good condition? Yes X No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes _____ No X
 Is the stand pipe vented at the base to provide drainage? Yes X No _____
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No _____

NOTES: Top of casing elevation: 1003.25
 Depth to Ground Water: 8.34
 Ground Water Elevation: 994.91

Date: 4/21-22/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast to rain
 Well Number: GMW-6S
 Project Number: 3050 "005"
 Evacuation Method: bailey

Depth of Well * 21.55 ft.
 Depth to Water * 4.89 ft.
 Length of Water Column 16.66 ft.
 Volume of Water in Well 2.7 gal.(s)
 3X Volume of Water in Well 9 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 9/12 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading
 initial 12.3
 after 3 (gal.) 12.5
 after 6 (gal.) 12.8
 after 9 (gal.) 13.1
 after 12 (gal.) 12.1
 after (gal.)

pH Reading
 4.0 Standard 4.1
 7.0 Standard 7.2
 10.0 Standard N/A
 initial 7.3
 after 3 (gal.) 7.2
 after 6 (gal.) 7.2
 after 9 (gal.) 7.3
 after 12 (gal.) 6.8
 after (gal.)

Conductivity Reading
 84 S Standard N/A
 1413 S Standard 1163 @ 16°C
 initial 37.1
 after 3 (gal.) 36.7
 after 6 (gal.) 36.8
 after 9 (gal.) 36.9
 after 12 (gal.) 36.6
 after (gal.)

Water Sample: 4/21/99; 1300; Hex Cr
 Time Collected: 4/22/99; 1105; Metals

Physical Appearance at Start

Color gray tint
 Odor none
 Turbidity (> 100 NTU's) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTU's) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes X No X
 Is the PVC well casing in good condition? Yes X No X
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes X No
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 992.42
 Depth to Ground Water: 4.89
 Ground Water Elevation: 987.53

Date: 4/21, 22/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast to sunny
 Well Number: GMW-6D
 Project Number: 3050 "005"
 Evacuation Method: bailey

Depth of Well * 28.65 ft.
 Depth to Water * 4.98 ft.
 Length of Water Column 23.67 ft.
 Volume of Water in Well 3.9 gal.(s)
 3X Volume of Water in Well 12 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 12/24 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing (Other, Specify)

Water parameters:

Temperature Reading

	initial	12.1
after <u>4</u> (gal.)	<u>13.6</u>	
after <u>8</u> (gal.)	<u>13.7</u>	
after <u>12</u> (gal.)	<u>14.0</u>	
after <u>16</u> (gal.)	<u>12.6</u>	
after <u>24</u> (gal.)	<u>12.8</u>	

pH Reading

	initial	7.2
after <u>4</u> (gal.)	<u>7.7</u>	
after <u>8</u> (gal.)	<u>7.4</u>	
after <u>12</u> (gal.)	<u>7.4</u>	
after <u>16</u> (gal.)	<u>7.2</u>	
after <u>24</u> (gal.)	<u>7.2</u>	

Conductivity Reading

	initial	434
after <u>4</u> (gal.)	<u>411</u>	
after <u>8</u> (gal.)	<u>394</u>	
after <u>12</u> (gal.)	<u>385</u>	
after <u>16</u> (gal.)	<u>492</u>	
after <u>24</u> (gal.)	<u>473</u>	

Water Sample: 4/21/99, 1319, Hex Cr
 Time Collected: 4/22/99, 1135, metals

Physical Appearance at Start

Color gray tint
 Odor rust
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12.4	C	
500 ml	plastic	1	no	none	4	C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes X No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 992.47
 Depth to Ground Water: 4.98
 Ground Water Elevation: 987.49

O'BRIEN & GERE ENGINEERS, INC.

Ground Water Sampling Log

Date: 4/22/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast 56°F
 Well Number: GMW-7
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 27.87 ft.
 Depth to Water * 5.13 ft.
 Length of Water Column 22.74 ft.
 Volume of Water in Well 3.7 gal.(s)
 3X Volume of Water in Well 11.1 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 12/16 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from

☒ Top of Well Casing☐ Top of Protective Casing

(Other, Specify)

Water parameters:

Temperature Reading

initial 11.1
 after 4 (gal.) 12.4
 after 8 (gal.) 12.7
 after 12 (gal.) 12.9
 after 16 (gal.) 11.6
 after (gal.)

pH Reading

4.0 Standard 4.0
 7.0 Standard 7.0
 10.0 Standard N/A
 initial 6.8
 after 4 (gal.) 7.1
 after 8 (gal.) 7.3
 after 12 (gal.) 7.2
 after 16 (gal.) 6.7
 after (gal.)

Conductivity Reading

84 S Standard N/A
 1413 S Standard 11.17 @ 13°C
 initial 327
 after 4 (gal.) 325
 after 8 (gal.) 359
 after 12 (gal.) 353
 after 16 (gal.) 343
 after (gal.)

Water Sample:

Time Collected:

Physical Appearance at Start

Color gray stained
 Odor dist
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml <u>C/V</u>	plastic	1	no	NaOH	12	4 C	
500 ml <u>Hex</u>	plastic	1	no	none	4	C	
500 ml <u>metals</u>	plastic	1	no	HNO3	<2	4 C	
1 liter <u>metals</u>	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 994.42
 Depth to Ground Water: 5.13
 Ground Water Elevation: 989.29

Date: 4/21/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast-rainy
 Well Number: GMW-9
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 29.97 ft.
 Depth to Water * 4.25 ft.
 Length of Water Column 25.72 ft.
 Volume of Water in Well 4.2 gal.(s)
 3X Volume of Water in Well 12.6 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 15/25 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading
 initial 12.1
 after 5 (gal.) 13.2
 after 10 (gal.) 13.7
 after 15 (gal.) 13.8
 after 20 (gal.) 13.5
 after 25 (gal.) 13.5

pH Reading
 4.0 Standard 4.0
 7.0 Standard 7.0
 10.0 Standard N/A
 initial 6.1
 after 5 (gal.) 6.5
 after 10 (gal.) 6.6
 after 15 (gal.) 6.6
 after 20 (gal.) 6.2
 after 25 (gal.) 6.4

Conductivity Reading
 84 S Standard N/A
 1413 S Standard 1113 @ 15°C
 initial 753
 after 5 (gal.) 806
 after 10 (gal.) 781
 after 15 (gal.) 767
 after 20 (gal.) 896
 after 25 (gal.) 861

Water Sample: 4/21/99; 1330; Hex Cr
 Time Collected: 4/22/99; 0935; Metals

Physical Appearance at Start

Color yellowish gray
 Odor dirt
 Turbidity (> 100 NTUs) yes
 Sheen/Free Product no

Physical Appearance at Sampling

Color slight yellow tint
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12.4	C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes X No
 Well covers and locks in good condition and secure? Yes X No
 Is the well stand pipe vertically aligned and secure? Yes X No
 Is the concrete pad and surface seal in good condition? Yes X No
 Are soils surrounding the well pad eroded? Yes No X
 Is the PVC well casing in good condition? Yes X No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes No X
 Is the stand pipe vented at the base to provide drainage? Yes X No
 Does the total depth of the well sounded correspond with original well completion depths? Yes X No

NOTES: Top of casing elevation: 997.34
 Depth to Ground Water: 4.25
 Ground Water Elevation: 993.09

Date: 4/20/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: PZ-1
 Project Number: 3050 "005"
 Evacuation Method: _____

Depth of Well * 20.32 ft.
 Depth to Water * 6.40 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing _____ (Other, Specify)

Water parameters:

Temperature Reading

initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading

4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading

84 S Standard _____
 1413 S Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:

Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU's) _____
 Sheen/Free Product _____

Sample Parameters: Ground Water Elevation Only

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes _____ No _____
 Well covers and locks in good condition and secure?.....Yes _____ No _____
 Is the well stand pipe vertically aligned and secure?.....Yes _____ No _____
 Is the concrete pad and surface seal in good condition?.....Yes _____ No _____
 Are soils surrounding the well pad eroded?.....Yes _____ No _____
 Is the PVC well casing in good condition?.....Yes _____ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes _____ No _____
 Is the stand pipe vented at the base to provide drainage?.....Yes _____ No _____
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes _____ No _____

NOTES: Top of casing elevation: 1001.66
 Depth to Ground Water: 6.40
 Ground Water Elevation: 995.26

Date: 4/20/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: PZ-2
 Project Number: 3050 "005"
 Evacuation Method: _____

Depth of Well * 20.32 ft.
 Depth to Water * 6.23 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify) _____

Water parameters:

Temperature Reading		pH Reading		Conductivity Reading	
initial	_____	4.0 Standard	_____	84 S Standard	_____
after	_____ (gal.)	7.0 Standard	_____	1413 S Standard	_____
after	_____ (gal.)	10.0 Standard	_____	initial	_____
after	_____ (gal.)	after	_____ (gal.)	after	_____ (gal.)
after	_____ (gal.)	after	_____ (gal.)	after	_____ (gal.)
after	_____ (gal.)	after	_____ (gal.)	after	_____ (gal.)
after	_____ (gal.)	after	_____ (gal.)	after	_____ (gal.)

Water Sample:

Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU's) _____
 Sheen/Free Product _____

Sample Parameters: **Ground Water Elevation Only**

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes _____ No _____
 Well covers and locks in good condition and secure? Yes _____ No _____
 Is the well stand pipe vertically aligned and secure? Yes _____ No _____
 Is the concrete pad and surface seal in good condition? Yes _____ No _____
 Are soils surrounding the well pad eroded? Yes _____ No _____
 Is the PVC well casing in good condition? Yes _____ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes _____ No _____
 Is the stand pipe vented at the base to provide drainage? Yes _____ No _____
 Does the total depth of the well sounded correspond with original well completion depths? Yes _____ No _____

NOTES: Top of casing elevation: 1001.97
 Depth to Ground Water: 6.23
 Ground Water Elevation: 995.74

Date: 4/20/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: PZ-3
 Project Number: 3050 "005"
 Evacuation Method: _____

Depth of Well * 20.28 ft.
 Depth to Water * 6.62 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing _____ (Other, Specify)

Water parameters:

Temperature Reading
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading
 84 S Standard _____
 1413 S Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:
 Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU's) _____
 Sheen/Free Product _____

Sample Parameters: Ground Water Elevation Only

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes _____ No _____
 Well covers and locks in good condition and secure?.....Yes _____ No _____
 Is the well stand pipe vertically aligned and secure?.....Yes _____ No _____
 Is the concrete pad and surface seal in good condition?.....Yes _____ No _____
 Are soils surrounding the well pad eroded?.....Yes _____ No _____
 Is the PVC well casing in good condition?.....Yes _____ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes _____ No _____
 Is the stand pipe vented at the base to provide drainage?.....Yes _____ No _____
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes _____ No _____

NOTES: Top of casing elevation: 1002.52
 Depth to Ground Water: 6.62
 Ground Water Elevation: 995.90

Date: 4/20/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: PZ-4
 Project Number: 3050 "005"
 Evacuation Method: _____

Depth of Well * 20.14 ft.
 Depth to Water * 8.34 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify) _____

Water parameters:

Temperature Reading
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading
 84 S Standard _____
 1413 S Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:
 Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Sample Parameters: Ground Water Elevation Only

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes _____ No _____
 Well covers and locks in good condition and secure?.....Yes _____ No _____
 Is the well stand pipe vertically aligned and secure?.....Yes _____ No _____
 Is the concrete pad and surface seal in good condition?.....Yes _____ No _____
 Are soils surrounding the well pad eroded?.....Yes _____ No _____
 Is the PVC well casing in good condition?.....Yes _____ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes _____ No _____
 Is the stand pipe vented at the base to provide drainage?.....Yes _____ No _____
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes _____ No _____

NOTES: Top of casing elevation: 1002.37
 Depth to Ground Water: 8.34
 Ground Water Elevation: 994.03

Date: 10/28/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: partly cloudy 60°F
 Well Number: GMW-2S
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 21.75 ft.
 Depth to Water * 10.11 ft.
 Length of Water Column 11.64 ft.
 Volume of Water in Well 7.6 gal.(s)
 3X Volume of Water in Well 22.8 gal.(s)

Water Volume /ft. for:

2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 12 gal.(s)
 Did well go dry? Yes X No

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading

initial 58.4
 after 8 (gal.) 56.7
 after 16/12 (gal.) 56.8
 after 24 (gal.)
 after (gal.)
 after (gal.)

pH Reading

4.0 Standard 7.0
 7.0 Standard 7.04
 10.0 Standard 7.04
 initial 6.38
 after 8 (gal.) 6.33
 after 16/12 (gal.) 6.28
 after 24 (gal.)
 after (gal.)
 after (gal.)

Conductivity Reading

84 S Standard N/A
 1413 S Standard 1100.57 F
 initial 1460
 after 8 (gal.) 1540
 after 16/12 (gal.) 1568
 after 24 (gal.)
 after (gal.)
 after (gal.)

Water Sample: 1215
 Time Collected: 1215

Turbidity: Ref: 0.02
 initial: 11.4

8 gal 335 16 gal 142
 24 gal

Physical Appearance at Start

Color clear
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product none

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTU's) no 48.5
 Sheen/Free Product none

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes No
 Well covers and locks in good condition and secure?.....Yes No
 Is the well stand pipe vertically aligned and secure?.....Yes No
 Is the concrete pad and surface seal in good condition?.....Yes No
 Are soils surrounding the well pad eroded?.....Yes No
 Is the PVC well casing in good condition?.....Yes No
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes No
 Is the stand pipe vented at the base to provide drainage?.....Yes No
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes No

NOTES: Top of casing elevation: 998.54
 Depth to Ground Water: 10.11
 Ground Water Elevation: 988.43

Date: 10/28/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: overcast 55°F
 Well Number: GMW-2D
 Project Number: 3050 "005"
 Evacuation Method: Bar-lev

Depth of Well * 32.06 ft.
 Depth to Water * 8.91 ft.
 Length of Water Column 23.15 ft.
 Volume of Water in Well 3.8 gal.(s)
 3X Volume of Water in Well 11.4 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 12 gal.(s)
 Did well go dry? Yes No X

(Other, Specify)

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐

Water parameters:

Temperature Reading

initial 57.1
 after 4 (gal.) 56.7
 after 8 (gal.) 54.5
 after 12 (gal.) 54.1
 after (gal.)
 after (gal.)

pH Reading

4.0 Standard 4.0
 7.0 Standard 7.0
 10.0 Standard N/A
 initial 6.05
 after 4 (gal.) 6.12
 after 8 (gal.) 6.17
 after 12 (gal.) 6.17
 after (gal.)
 after (gal.)

Conductivity Reading

84 S Standard 104
 1413 S Standard 1000 55°F
 initial 196
 after 4 (gal.) 291
 after 8 (gal.) 287
 after 12 (gal.) 293
 after (gal.)
 after (gal.)

Water Sample: 1100
 Time Collected: 1100

Turbidity: ref 0.02 NTU 4 gal 40 8 gal 38.5
initial 8.0 12 gal 35

Physical Appearance at Start

Color clear
 Odor none
 Turbidity (> 100 NTUs) no (8.0)
 Sheen/Free Product none

Physical Appearance at Sampling

Color slightly cloudy
 Odor none
 Turbidity (> 100 NTUs) no 35
 Sheen/Free Product none

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes ✓ No
 Well covers and locks in good condition and secure?.....Yes ✓ No
 Is the well stand pipe vertically aligned and secure?.....Yes ✓ No
 Is the concrete pad and surface seal in good condition?.....Yes ✓ No
 Are soils surrounding the well pad eroded?.....Yes ✓ No ✓
 Is the PVC well casing in good condition?.....Yes ✓ No
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes ✓ No ✓
 Is the stand pipe vented at the base to provide drainage?.....Yes ✓ No
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes ✓ No

NOTES: Top of casing elevation: 998.42'
 Depth to Ground Water: 8.91
 Ground Water Elevation: 989.51

Date: 10/28/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: GMW-3
 Project Number: 3050 "005"
 Evacuation Method: hailer

Depth of Well * 18.50 ft.
 Depth to Water * 6.68 ft.
 Length of Water Column 17.82 ft.
 Volume of Water in Well 7.7 gal.(s)
 3X Volume of Water in Well 23.7 gal.(s)

Water Volume /ft. for:
 2" Diameter Well = 0.163 X LWC
 X 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 24 gal.(s)
 Did well go dry? Yes _____ No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify) _____

Water parameters:

Temperature Reading

initial 65.0
 after 8 (gal.) 60.7
 after 16 (gal.) 59.2
 after 24 (gal.) 58.8
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading

4.0 Standard 3.98
 7.0 Standard 7.01
 10.0 Standard N/A
 initial 8 (gal.) 5.60
 after 16 (gal.) 6.09
 after 24 (gal.) 6.24
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading

84 S Standard N/A
 1413 S Standard 1412 @ 77°F
 initial 8 (gal.) 1446
 after 16 (gal.) 1451
 after 24 (gal.) 1418
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample: _____
 Time Collected: 1730

Turbidity: Ref: 0.02
 initial: 67

8 gal 127
 16 gal 28
 24 gal 20

Physical Appearance at Start

Color clear
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product none

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTUs) no 20
 Sheen/Free Product none

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes ✓ No _____
 Well covers and locks in good condition and secure? Yes ✓ No _____
 Is the well stand pipe vertically aligned and secure? Yes ✓ No _____
 Is the concrete pad and surface seal in good condition? Yes ✓ No _____
 Are soils surrounding the well pad eroded? Yes _____ No ✓
 Is the PVC well casing in good condition? Yes ✓ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes _____ No ✓
 Is the stand pipe vented at the base to provide drainage? Yes ✓ No _____
 Does the total depth of the well sounded correspond with original well completion depths? Yes ✓ No _____

NOTES: Top of casing elevation: 996.41
 Depth to Ground Water: 6.68
 Ground Water Elevation: 989.73

Date: 10/28/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: mostly clear 70°F
 Well Number: GMW-3S
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 23.61 ft.
 Depth to Water * 9.63 ft.
 Length of Water Column 13.98 ft.
 Volume of Water in Well 2.3 gal.(s)
 3X Volume of Water in Well 6.9 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 7.5 gal.(s)
 Did well go dry? Yes No ✓

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading
 initial 63.2
 after 2.5 (gal.) 60.3
 after 5.0 (gal.) 59.3
 after 7.5 (gal.) 59.1
 after (gal.)
 after (gal.)

pH Reading
 4.0 Standard 3.99
 7.0 Standard 7.01
 10.0 Standard NA
 initial 9.96
 after 2.5 (gal.) 6.13
 after 5.0 (gal.) 6.15
 after 7.5 (gal.) 6.13
 after (gal.)
 after (gal.)

Conductivity Reading
 84 S Standard NA
 1413 S Standard 1305 @ 70°F
 initial 1261
 after 2.5 (gal.) 1171
 after 5.0 (gal.) 1218
 after 7.5 (gal.) 1263
 after (gal.)
 after (gal.)

Water Sample: 1510
 Time Collected: 1510

Turbidity: Ref: 002
 initial: 2.70

Physical Appearance at Start

Color clear
 Odor none
 Turbidity (> 100 NTUs) none
 Sheen/Free Product none

Physical Appearance at Sampling

Color slightly cloudy
 Odor none
 Turbidity (> 100 NTUs) no (14)
 Sheen/Free Product none

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes ✓ No
 Well covers and locks in good condition and secure? Yes ✓ No
 Is the well stand pipe vertically aligned and secure? Yes ✓ No
 Is the concrete pad and surface seal in good condition? Yes ✓ No
 Are soils surrounding the well pad eroded? Yes ✓ No ✓
 Is the PVC well casing in good condition? Yes ✓ No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes ✓ No ✓
 Is the stand pipe vented at the base to provide drainage? Yes ✓ No
 Does the total depth of the well sounded correspond with original well completion depths? Yes ✓ No

NOTES: Top of casing elevation: 997.67
 Depth to Ground Water: 9.63
 Ground Water Elevation: 988.04

Date: 10/28/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: mostly Sunny 70°F
 Well Number: GMW-3D
 Project Number: 3050 "005"
 Evacuation Method: Baker

Depth of Well * 36.66 ft.
 Depth to Water * 9.43 ft.
 Length of Water Column 27.23 ft.
 Volume of Water in Well 4.4 gal.(s)
 3X Volume of Water in Well 13.2 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 14 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading

initial 64.7
 after 4.5 (gal.) 59.8
 after 9 (gal.) 58.7
 after 13.5 (gal.) 58.5
 after (gal.)
 after (gal.)

pH Reading

4.0 Standard 4.01
 7.0 Standard 7.03
 10.0 Standard N/A
 initial 6.31
 after 4.5 (gal.) 6.15
 after 9 (gal.) 6.48
 after 13.5 (gal.) 6.14
 after (gal.)
 after (gal.)

Conductivity Reading

84 S Standard N/A
 1413 S Standard 1413 @ 77°F
 initial 1008
 after 4.5 (gal.) 1147
 after 9.0 (gal.) 1148
 after 13.5 (gal.) 1157
 after (gal.)
 after (gal.)

Water Sample: 1610
 Time Collected:

Turbidity: ref: 0.02
initial
4.5 26
9.0 22
13.5 12.5

Physical Appearance at Start

Color clear
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product none

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTU's) no (12.5)
 Sheen/Free Product none

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes ✓ No
 Well covers and locks in good condition and secure?.....Yes ✓ No
 Is the well stand pipe vertically aligned and secure?.....Yes ✓ No
 Is the concrete pad and surface seal in good condition?.....Yes ✓ No
 Are soils surrounding the well pad eroded?.....Yes No ✓
 Is the PVC well casing in good condition?.....Yes ✓ No
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes No ✓
 Is the stand pipe vented at the base to provide drainage?.....Yes ✓ No
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes ✓ No

NOTES: Top of casing elevation: 997.71
 Depth to Ground Water: 9.43
 Ground Water Elevation: 988.28

Date: 1/27/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: Clear 75°F
 Well Number: GMW-4S
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 20.48 ft.
 Depth to Water * 8.06 ft.
 Length of Water Column 12.42 ft.
 Volume of Water in Well 8.1 gal.(s)
 3X Volume of Water in Well 24.3 gal.(s)

Water Volume /ft. for:
~~X~~ 2" Diameter Well = 0.163 X LWC
~~X~~ 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 9 gal.(s)
 Did well go dry? Yes ☒ No ☐

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading
 after 8 (gal.) initial 66.7
 after 8 (gal.) 64.4
 after (gal.)
 after (gal.)
 after (gal.)

pH Reading
 4.0 Standard 4.01
 7.0 Standard 7.03
 10.0 Standard NA
 initial 6.09
 after 8 (gal.) 6.47
 after (gal.)
 after (gal.)
 after (gal.)
 after (gal.)

Conductivity Reading
 84 S Standard NA
 1413 S Standard 1467 @ 80°F
 initial 3590
 after 8 (gal.) 3420
 after (gal.)
 after (gal.)
 after (gal.)
 after (gal.)

Water Sample: 1500
 Time Collected: 1500

Turbidity: cal: 0.02 / Initial: 3 gal: 836

Physical Appearance at Start

Color clear
 Odor none
 Turbidity (> 100 NTUs) 3
 Sheen/Free Product none

Physical Appearance at Sampling

Color milky gray
 Odor none
 Turbidity (> 100 NTU's) yes 800's
 Sheen/Free Product none

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes ☒ No ☐
 Well covers and locks in good condition and secure?.....Yes ☒ No ☐
 Is the well stand pipe vertically aligned and secure?.....Yes ☒ No ☐
 Is the concrete pad and surface seal in good condition?.....Yes ☒ No ☐
 Are soils surrounding the well pad eroded?.....Yes ☒ No ☒
 Is the PVC well casing in good condition?.....Yes ☒ No ☐
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes ☒ No ☒
 Is the stand pipe vented at the base to provide drainage?.....Yes ☒ No ☐
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes ☒ No ☐

NOTES: Top of casing elevation: 997.89
 Depth to Ground Water: 8.06
 Ground Water Elevation: 989.83

Date: 10/27/97
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: clear 75°
 Well Number: GMW-4D
 Project Number: 3050 "005"
 Evacuation Method: vacuum

Depth of Well * 37.09 ft.
 Depth to Water * 9.42 ft.
 Length of Water Column 27.67 ft.
 Volume of Water in Well 4.5 gal.(s)
 3X Volume of Water in Well 13.5 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling
 Did well go dry?

Yes 14 gal.(s)
 No X

(Other, Specify)

*Measurements taken from

☒ Top of Well Casing☐ Top of Protective Casing

Water parameters:

Temperature Reading

initial 66.4
 after 4.5 (gal.) 64.5
 after 9.0 (gal.) 62.4
 after 13.5 (gal.) 63.4
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading

4.0 Standard 3.99
 7.0 Standard 7.02
 10.0 Standard _____
 initial 7.05
 after 4.5 (gal.) 7.16
 after 9.0 (gal.) 6.86
 after 13.5 (gal.) 6.72
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading

84 S Standard NA
 1413 S Standard 1467089
 initial 1590
 after 4.5 (gal.) 1550
 after 9.0 (gal.) 1660
 after 13.5 (gal.) 1698
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:

Time Collected: 1450

Turbidity: cal: 0.02 initial: 78.2
4.5 gal 29 9.0 37 13.5 24

Physical Appearance at Start

Color slightly milky
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product none

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTUs) 24
 Sheen/Free Product none

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes ✓ No _____
 Well covers and locks in good condition and secure?.....Yes ✓ No _____
 Is the well stand pipe vertically aligned and secure?.....Yes ✓ No _____
 Is the concrete pad and surface seal in good condition?.....Yes ✓ No _____
 Are soils surrounding the well pad eroded?.....Yes ✓ No ✓
 Is the PVC well casing in good condition?.....Yes ✓ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes ✓ No ✓
 Is the stand pipe vented at the base to provide drainage?.....Yes ✓ No _____
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes ✓ No _____

NOTES: Top of casing elevation: 999.25
 Depth to Ground Water: 9.42
 Ground Water Elevation: 989.83

Date: 10/27/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: clear 50°F
 Well Number: GMW-5S
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 23.83 ft.
 Depth to Water * 10.27 ft.
 Length of Water Column 13.56 ft.
 Volume of Water in Well 2.2 gal.(s)
 3X Volume of Water in Well 6.6 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 7.5 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading

initial 60.3
 after 2.5 (gal.) 58.3
 after 5.0 (gal.) 56.7
 after 7.5 (gal.) 57.2
 after (gal.)
 after (gal.)

pH Reading

4.0 Standard 3.99
 7.0 Standard 7.01
 10.0 Standard N/A
 initial 6.13
 after 2.5 (gal.) 6.28
 after 5.0 (gal.) 6.37
 after 7.5 (gal.) 6.45
 after (gal.)
 after (gal.)

Conductivity Reading

84 S Standard N/A
 1413 S Standard 1305 @ 70°F
 initial 1548
 after 2.5 (gal.) 1828
 after 5.0 (gal.) 1835
 after 7.5 (gal.) 1987
 after (gal.)
 after (gal.)

Water Sample: 1030 Hex Cr: 1207

Turbidity: standard 0.02 cal. #0.02
 I: 2.4/153/156/42.4

Physical Appearance at Start

Color clear
 Odor none
 Turbidity (> 100 NTUs) 2.4
 Sheen/Free Product none

Physical Appearance at Sampling

Color slightly cloudy
 Odor none
 Turbidity (> 100 NTUs) NO, 42.4
 Sheen/Free Product NO

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes ✓ No
 Well covers and locks in good condition and secure? Yes ✓ No
 Is the well stand pipe vertically aligned and secure? Yes ✓ No
 Is the concrete pad and surface seal in good condition? Yes ✓ No
 Are soils surrounding the well pad eroded? Yes ✓ No ✓
 Is the PVC well casing in good condition? Yes ✓ No
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes ✓ No ✓
 Is the stand pipe vented at the base to provide drainage? Yes ✓ No
 Does the total depth of the well sounded correspond with original well completion depths? Yes ✓ No

NOTES: Top of casing elevation: 1003.25'
 Depth to Ground Water: 10.27
 Ground Water Elevation: 992.98

Date: 10/27/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: clear 60°F
 Well Number: GMW-5D
 Project Number: 3050 "005"
 Evacuation Method: Barter

Depth of Well * 37.77 ft.
 Depth to Water * 12.49 ft.
 Length of Water Column 25.28 ft.
 Volume of Water in Well 4.1 gal.(s)
 3X Volume of Water in Well 12.3 gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 12 gal.(s)
 Did well go dry? Yes No X

(Other, Specify)

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐

Water parameters:

Temperature Reading

initial 62.3
 after 4 (gal.) 58.5
 after 8 (gal.) 57.7
 after 12 (gal.) 57.4
 after (gal.)
 after (gal.)

pH Reading

4.0 Standard 4.04
 7.0 Standard 6.99
 10.0 Standard N/A
 initial 4.06-6.26
 after 4 (gal.) 7.11
 after 8 (gal.) 7.35
 after 12 (gal.) 7.45
 after (gal.)
 after (gal.)

Conductivity Reading

84 S Standard N/A
 1413 S Standard 1257 @ 66°F
 initial 1106
 after 4 (gal.) 1387
 after 8 (gal.) 1160
 after 12 (gal.) 1140
 after (gal.)
 after (gal.)

Water Sample:

Time Collected:

1130, Cn^{tb}: 1205

Turbidity: 4.04 0.02 NTU initial: 8.6 4: 17 8: 14.4
 12: 23.4

Physical Appearance at Start

Color clear
 Odor none
 Turbidity (> 100 NTUs)
 Sheen/Free Product none

Physical Appearance at Sampling

Color clear
 Odor none
 Turbidity (> 100 NTUs) 10: 23
 Sheen/Free Product none

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes ✓ No
 Well covers and locks in good condition and secure?.....Yes ✓ No
 Is the well stand pipe vertically aligned and secure?.....Yes ✓ No
 Is the concrete pad and surface seal in good condition?.....Yes ✓ No
 Are soils surrounding the well pad eroded?.....Yes ✓ No ✓
 Is the PVC well casing in good condition?.....Yes ✓ No
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes ✓ No ✓
 Is the stand pipe vented at the base to provide drainage?.....Yes ✓ No
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes ✓ No

NOTES: Top of casing elevation: 1003.25
 Depth to Ground Water: 12.49
 Ground Water Elevation: 990.76

Date: 10/27/99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: Clear 80°F
 Well Number: GMW-9
 Project Number: 3050 "005"
 Evacuation Method: Bailer

Depth of Well * 29.97 ft.
 Depth to Water * 7.73 ft.
 Length of Water Column 22.24 ft.
 Volume of Water in Well 3.6 gal.(s)
 3X Volume of Water in Well 10.8 gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling 12 gal.(s)
 Did well go dry? Yes No X

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify)

Water parameters:

Temperature Reading

initial 69.7
 after 4 (gal.) 69.2
 after 8 (gal.) 69.0
 after 12 (gal.) 64.2
 after (gal.)
 after (gal.)

pH Reading

4.0 Standard 4.02
 7.0 Standard 6.99
 10.0 Standard NA
 initial 7.07
 after 4 (gal.) 6.62
 after 8 (gal.) 6.55
 after 12 (gal.) 6.68
 after (gal.)
 after (gal.)

Conductivity Reading

84 S Standard NA
 1413 S Standard 1580.850F
 initial 1874
 after 4 (gal.) 1040
 after 8 (gal.) 1123 (1123)
 after 12 (gal.) 1132
 after (gal.)
 after (gal.)

Water Sample: 1615
 Time Collected:

Turbidity: cal: 0.02
 initial: 15.4 4gal 184 8gal 84 12gal 75

Physical Appearance at Start

Color slightly cloudy
 Odor none
 Turbidity (> 100 NTUs) no
 Sheen/Free Product no

Physical Appearance at Sampling

Color slightly gray
 Odor none
 Turbidity (> 100 NTU's) no
 Sheen/Free Product no

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes ✓ No
 Well covers and locks in good condition and secure?.....Yes ✓ No
 Is the well stand pipe vertically aligned and secure?.....Yes ✓ No
 Is the concrete pad and surface seal in good condition?.....Yes ✓ No
 Are soils surrounding the well pad eroded?.....Yes ✓ No ✓
 Is the PVC well casing in good condition?.....Yes ✓ No
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes ✓ No ✓
 Is the stand pipe vented at the base to provide drainage?.....Yes ✓ No
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes ✓ No

NOTES: Top of casing elevation: 997.34
 Depth to Ground Water: 7.73
 Ground Water Elevation: 989.61

Date: 10-26-95
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: GMW-6S
 Project Number: 3050 "005"
 Evacuation Method: _____

Water level only
 Depth of Well * 21.55 ft.
 Depth to Water * 8.11 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from

☒ Top of Well Casing☐ Top of Protective Casing

(Other, Specify)

Water parameters:

Temperature Reading

initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading

4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading

84 S Standard _____
 1413 S Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:

Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes ☒ No _____
 Well covers and locks in good condition and secure? Yes ☒ No _____
 Is the well stand pipe vertically aligned and secure? Yes ☒ No _____
 Is the concrete pad and surface seal in good condition? Yes ☒ No _____
 Are soils surrounding the well pad eroded? Yes ☒ No ☒
 Is the PVC well casing in good condition? Yes ☒ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes ☒ No ☒
 Is the stand pipe vented at the base to provide drainage? Yes ☒ No _____
 Does the total depth of the well sounded correspond with original well completion depths? Yes ☒ No _____

NOTES: Top of casing elevation: 992.42
 Depth to Ground Water: 8.11
 Ground Water Elevation: 984.31

Date: 10-26-99Site Name: Inland RealtySite Location: Maryville, MOPersonnel: William Wright

Weather: _____

Well Number: GMW-6DProject Number: 3050 "005"

Evacuation Method: _____

Depth of Well * 28.65 ft.Depth to Water * 8.20 ft.

Length of Water Column _____ ft.

Volume of Water in Well _____ gal.(s)

3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:

X 2" Diameter Well = 0.163 X LWC

4" Diameter Well = 0.653 X LWC

6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)

Did well go dry? Yes _____ No _____

(Other, Specify) _____

*Measurements taken from

☒ Top of Well Casing☐ Top of Protective Casing

Water parameters:

Temperature Reading

initial _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

pH Reading

4.0 Standard _____

7.0 Standard _____

10.0 Standard _____

initial _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

Conductivity Reading

84 S Standard _____

1413 S Standard _____

initial _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

after _____ (gal.) _____

Water Sample:

Time Collected: _____

Physical Appearance at Start

Color _____

Odor _____

Turbidity (> 100 NTUs) _____

Sheen/Free Product _____

Physical Appearance at Sampling

Color _____

Odor _____

Turbidity (> 100 NTU's) _____

Sheen/Free Product _____

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	platic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes ☒ No _____

Well covers and locks in good condition and secure?.....Yes ☒ No _____

Is the well stand pipe vertically aligned and secure?.....Yes ☒ No _____

Is the concrete pad and surface seal in good condition?.....Yes ☒ No ☒

Are soils surrounding the well pad eroded?.....Yes ☒ No _____

Is the PVC well casing in good condition?.....Yes ☒ No _____

Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes ☒ No ☒

Is the stand pipe vented at the base to provide drainage?.....Yes ☒ No _____

Does the total depth of the well sounded correspond with original well completion depths?.....Yes ☒ No _____

NOTES: Top of casing elevation: 992.47

Depth to Ground Water: 8.20

Ground Water Elevation: 984.27

Date: 10-26-99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: GMW-7
 Project Number: 3050 "005"
 Evacuation Method: _____

water level only
 Depth of Well * 27.87 ft.
 Depth to Water * 10.12 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify) _____

Water parameters:

Temperature Reading

initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading

4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading

84 S Standard _____
 1413 S Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:

Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU's) _____
 Sheen/Free Product _____

Sample Parameters: Cd, Cr, Hex Cr, CN, Hg, Mn, Ni, Pb, Zn

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity
500 ml	plastic	1	no	NaOH	12	4 C	
500 ml	plastic	1	no	none		4 C	
500 ml	plastic	1	no	HNO3	<2	4 C	
1 liter	plastic	1	no	HNO3	<2	4 C	

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes ☒ No _____
 Well covers and locks in good condition and secure?.....Yes ☒ No _____
 Is the well stand pipe vertically aligned and secure?.....Yes ☒ No _____
 Is the concrete pad and surface seal in good condition?.....Yes ☒ No ☒
 Are soils surrounding the well pad eroded?.....Yes ☒ No _____
 Is the PVC well casing in good condition?.....Yes ☒ No ☒
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes ☒ No ☒
 Is the stand pipe vented at the base to provide drainage?.....Yes ☒ No _____
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes ☒ No _____

NOTES: Top of casing elevation: 994.42
 Depth to Ground Water: 10.12
 Ground Water Elevation: 984.30

Date: 10-26-99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: PZ-1
 Project Number: 3050 "005"
 Evacuation Method: _____

Water level only
 Depth of Well * 20.32 ft.
 Depth to Water * 11.57 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify) _____

Water parameters:

Temperature Reading

initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading

4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading

84 S Standard _____
 1413 S Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:

Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Sample Parameters: Ground Water Elevation Only

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....Yes / No _____
 Well covers and locks in good condition and secure?.....Yes / No _____
 Is the well stand pipe vertically aligned and secure?.....Yes / No _____
 Is the concrete pad and surface seal in good condition?.....Yes / No _____
 Are soils surrounding the well pad eroded?.....Yes _____ No _____
 Is the PVC well casing in good condition?.....Yes _____ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing?.....Yes _____ No _____
 Is the stand pipe vented at the base to provide drainage?.....Yes _____ No _____
 Does the total depth of the well sounded correspond with original well completion depths?.....Yes _____ No _____

NOTES: Top of casing elevation: 1001.66
 Depth to Ground Water: 11.57
 Ground Water Elevation: 990.09

Date: 10-26-99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: PZ-2
 Project Number: 3050 "005"
 Evacuation Method: _____

Water level only
 Depth of Well * 20.32 ft.
 Depth to Water * 11.14 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify) _____

Water parameters:

Temperature Reading
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading
 4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading
 84 S Standard _____
 1413 S Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:
 Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU's) _____
 Sheen/Free Product _____

Sample Parameters: **Ground Water Elevation Only**

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes _____ No _____
 Well covers and locks in good condition and secure? Yes _____ No _____
 Is the well stand pipe vertically aligned and secure? Yes _____ No _____
 Is the concrete pad and surface seal in good condition? Yes _____ No _____
 Are soils surrounding the well pad eroded? Yes _____ No _____
 Is the PVC well casing in good condition? Yes _____ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes _____ No _____
 Is the stand pipe vented at the base to provide drainage? Yes _____ No _____
 Does the total depth of the well sounded correspond with original well completion depths? Yes _____ No _____

NOTES: Top of casing elevation: 1001.97
 Depth to Ground Water: 11.14
 Ground Water Elevation: 990.83

Date: 10-26-99
 Site Name: Inland Realty
 Site Location: Maryville, MO
 Personnel: William Wright

Weather: _____
 Well Number: PZ-3
 Project Number: 3050 "005"
 Evacuation Method: _____

Water level only
 Depth of Well * 20.28 ft.
 Depth to Water * 8.51 ft.
 Length of Water Column _____ ft.
 Volume of Water in Well _____ gal.(s)
 3X Volume of Water in Well _____ gal.(s)

Water Volume /ft. for:
 X 2" Diameter Well = 0.163 X LWC
 4" Diameter Well = 0.653 X LWC
 6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
 Did well go dry? Yes _____ No _____

*Measurements taken from ☒ Top of Well Casing ☐ Top of Protective Casing ☐ (Other, Specify) _____

Water parameters:

Temperature Reading

initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

pH Reading

4.0 Standard _____
 7.0 Standard _____
 10.0 Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Conductivity Reading

84 S Standard _____
 1413 S Standard _____
 initial _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____
 after _____ (gal.) _____

Water Sample:

Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU's) _____
 Sheen/Free Product _____

Sample Parameters: Ground Water Elevation Only

Container Size	Container Type	# Collected	Filtered	Preservative	pH	Temp.	Conductivity

Monitoring Well Integrity Checklist:

Well identification number clearly marked? Yes _____ No _____
 Well covers and locks in good condition and secure? Yes _____ No _____
 Is the well stand pipe vertically aligned and secure? Yes _____ No _____
 Is the concrete pad and surface seal in good condition? Yes _____ No _____
 Are soils surrounding the well pad eroded? Yes _____ No _____
 Is the PVC well casing in good condition? Yes _____ No _____
 Is there standing water in the annular space between the well stand pipe and PVC casing? Yes _____ No _____
 Is the stand pipe vented at the base to provide drainage? Yes _____ No _____
 Does the total depth of the well sounded correspond with original well completion depths? Yes _____ No _____

NOTES:

Top of casing elevation: 1002.52
 Depth to Ground Water: 8.51
 Ground Water Elevation: 994.01

Weather:	
Well Number:	PZ-4
Project Number:	3050 "005"
Evacuation Method:	

Water Volume /ft. for:	
X	2" Diameter Well = 0.163 X LWC
	4" Diameter Well = 0.653 X LWC
	6" Diameter Well = 1.469 X LWC

Volume removed before sampling _____ gal.(s)
Did well go dry? Yes _____ No _____

Top of Protective Casing

(Other, Specify)

Water parameters:

pH Reading

Conductivity Reading

	4.0 Standard	_____
	7.0 Standard	_____
	10.0 Standard	_____
	initial	_____
after _____	(gal.)	_____
after _____	(gal.)	_____
after _____	(gal.)	_____
after _____	(gal.)	_____
after _____	(gal.)	_____

84 S Standard _____
1413 S Standard _____
initial _____
after _____ (gal.) _____
after _____ (gal.) _____
after _____ (gal.) _____
after _____ (gal.) _____
after _____ (gal.) _____

Water Sample:

Time Collected: _____

Physical Appearance at Start

Color _____
 Odor _____
 Turbidity (> 100 NTUs) _____
 Sheen/Free Product _____

Physical Appearance at Sampling

Color _____
 Odor _____
 Turbidity (> 100 NTU's) _____
 Sheen/Free Product _____

Sample Parameters: **Ground Water Elevation Only**

[illegible]

Monitoring Well Integrity Checklist:

Well identification number clearly marked?.....	Yes _____	No _____
Well covers and locks in good condition and secure?.....	Yes _____	No _____
Is the well stand pipe vertically aligned and secure?.....	Yes _____	No _____
Is the concrete pad and surface seal in good condition?.....	Yes _____	No _____
Are soils surrounding the well pad eroded?.....	Yes _____	No _____
Is the PVC well casing in good condition?.....	Yes _____	No _____
Is there standing water in the annular space between the well stand pipe and PVC casing?.....	Yes _____	No _____
Is the stand pipe vented at the base to provide drainage?.....	Yes _____	No _____
Does the total depth of the well sounded correspond with original well completion depths?.....	Yes _____	No _____

NOTES: Top of casing elevation: 1002.37
Depth to Ground Water: 10.34
Ground Water Elevation: 992.03

Laboratory analytical reports

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

June 17, 1999

William E. Wright
O'Brien & Gere Engineers, Inc.
5000 Cedar Plaza Parkway
St. Louis, MO 63128

RE: ATAS #26482.01-#26482.14
#3050.005 - Inland Realty Co, Maryville, Missouri

Dear Mr. Wright:

Enclosed are the analytical reports for the samples received in our laboratory on April 26, 1999.

If, in your review, you should have any questions or require additional information, please call me at (314) 434-4570.

Thank you for choosing ATAS for your analytical needs.

Sincerely,



Ruseal Brewer
Project Manager

Enclosures

RB/jp

ATAS

"Professional Commitment"



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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.01
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #2S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.044	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.511	05-20-99	SW 6010
NICKEL	0.005	mg/L	0.007	05-20-99	SW 6010
ZINC	0.010	mg/L	0.010	05-20-99	SW 6010
MERCURY	0.0002	mg/L	0.0002	05-03-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.02
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #2D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.576	05-20-99	SW 6010
NICKEL	0.005	mg/L	ND	05-20-99	SW 6010
ZINC	0.010	mg/L	0.011	05-20-99	SW 6010
MERCURY	0.0002	mg/L	0.0002	05-03-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



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5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.03
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #3

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.019	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	0.005	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	1.06	05-20-99	SW 6010
NICKEL	0.005	mg/L	0.005	05-20-99	SW 6010
ZINC	0.010	mg/L	0.018	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-03-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.04
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #3S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.066	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.270	05-20-99	SW 6010
NICKEL	0.005	mg/L	0.008	05-20-99	SW 6010
ZINC	0.010	mg/L	0.010	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-03-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.05
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #3D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.655	05-20-99	SW 6010
NICKEL	0.005	mg/L	ND	05-20-99	SW 6010
ZINC	0.010	mg/L	0.011	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-03-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



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5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.06
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #4S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.014	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	0.009	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	39.4	05-20-99	SW 6010
NICKEL	0.005	mg/L	0.688	05-20-99	SW 6010
ZINC	0.010	mg/L	1.85	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-03-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.07
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #4D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	1.35	05-20-99	SW 6010
NICKEL	0.005	mg/L	ND	05-20-99	SW 6010
ZINC	0.010	mg/L	0.016	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-03-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.08
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #10

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	ND	05-20-99	SW 6010
NICKEL	0.005	mg/L	ND	05-20-99	SW 6010
ZINC	0.010	mg/L	ND	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-03-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.09
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #5S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.303	05-20-99	SW 6010
NICKEL	0.005	mg/L	0.015	05-20-99	SW 6010
ZINC	0.010	mg/L	0.015	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-05-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.10
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #5D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.801	05-20-99	SW 6010
NICKEL	0.005	mg/L	ND	05-20-99	SW 6010
ZINC	0.010	mg/L	0.010	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-05-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.11
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #6S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.102	05-20-99	SW 6010
NICKEL	0.005	mg/L	0.007	05-20-99	SW 6010
ZINC	0.010	mg/L	0.016	05-20-99	SW 6010
MERCURY	0.0002	mg/L	0.0009	05-05-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.12
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #6D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	ND	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.144	05-20-99	SW 6010
NICKEL	0.005	mg/L	ND	05-20-99	SW 6010
ZINC	0.010	mg/L	ND	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-05-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.13
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #7

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	0.005	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.219	05-20-99	SW 6010
NICKEL	0.005	mg/L	0.009	05-20-99	SW 6010
ZINC	0.010	mg/L	0.024	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-05-99	SW 7470



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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

SAMPLE MATRIX : WATER
ATAS # : 26482.14
DATE SUBMITTED: 04-26-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #9

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	05-05-99	SW 9010
METALS					
CADMIUM	0.005	mg/L	ND	05-10-99	SW 6010
CHROMIUM	0.005	mg/L	0.007	05-10-99	SW 6010
LEAD	0.002	mg/L	ND	05-20-99	SW 6010
MANGANESE	0.005	mg/L	0.774	05-20-99	SW 6010
NICKEL	0.005	mg/L	ND	05-20-99	SW 6010
ZINC	0.010	mg/L	0.010	05-20-99	SW 6010
MERCURY	0.0002	mg/L	ND	05-05-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



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CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2648201MT(712)

DATE : 06-17-99

QA/QC

<u>DESCRIPTION</u>		<u>PARAMETER</u>	<u>RESULTS</u>
METHOD BLANK	05-05-99	TOTAL CYANIDE	<0.005 mg/L
METHOD BLANK	05-10-99	CADMIUM	<0.005 mg/L
METHOD BLANK	05-10-99	CHROMIUM	<0.005 mg/L
METHOD BLANK	05-20-99	LEAD	<0.002 mg/L
METHOD BLANK	05-20-99	MANGANESE	<0.005 mg/L
METHOD BLANK	05-20-99	NICKEL	<0.005 mg/L
METHOD BLANK	05-03-99	MERCURY	<0.0002 mg/L
METHOD BLANK	05-05-99	MERCURY	<0.0002 mg/L
CONTROL SPIKE	05-05-99	TOTAL CYANIDE	91 % RECOVERY
CONTROL SPIKE	05-10-99	CADMIUM	97 % RECOVERY
CONTROL SPIKE	05-10-99	CHROMIUM	95 % RECOVERY
CONTROL SPIKE	05-20-99	LEAD	98 % RECOVERY
CONTROL SPIKE	05-20-99	MANGANESE	101 % RECOVERY
CONTROL SPIKE	05-20-99	NICKEL	100 % RECOVERY
CONTROL SPIKE	05-03-99	MERCURY	104 % RECOVERY
CONTROL SPIKE	05-05-99	MERCURY	100 % RECOVERY

**O'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO

Address: 5000 Cedar Plaza Parkway

Phone: (314) 842-4550

Job No. 3050.005

Sheet 1 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI			Collected By: (Signature) <i>William E. Wright</i> WD 4-26-99			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #2S <i>PH 12</i>	<i>4/23/99</i>	<i>0900</i>	Water	Grab	1-P, 500 mL	Cyanide (CN) <i>26482.0</i>
GMW #2S <i>1</i>	<i>4/23/99</i>	<i>0900</i>	Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn) <i>Mn, Ni</i>
GMW #2S			Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #2S <i>1</i>	<i>4/23/99</i>	<i>0900</i>	Water	Grab	1-P, <i>500 mL</i>	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #2D <i>12</i>	<i>4/23/99</i>	<i>0918</i>	Water	Grab	1-P, 500 mL	CN
GMW #2D <i>1</i>	<i>4/23/99</i>	<i>0918</i>	Water	Grab	1-P, 500 mL	Total Pb and Zn, <i>Mn, Ni</i>
GMW #2D			Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #2D <i>1 12 SN</i>	<i>4/23/99</i>	<i>0918</i>	Water	Grab	1-P, <i>500 mL</i>	Total Metals-Cd, Cr, Hg, Mn, Ni
GMW #3 <i>12</i>	<i>4/23/99</i>	<i>1105</i>	Water	Grab	1-P, 500 mL	CN
GMW #3 <i>1</i>	<i>4/23/99</i>	<i>1105</i>	Water	Grab	1-P, 500 mL	Total Pb and Zn, <i>Mn, Ni</i>
GMW #3			Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #3 <i>1</i>	<i>4/23/99</i>	<i>1105</i>	Water	Grab	1-P, <i>500 mL</i>	Total Metals-Cd, Cr, Hg, Mn, Ni

Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

Relinquished by: _____	Date	Time	Received by: <i>William E. Wright</i>	Date	Time
of: _____			of: <i>ATAS</i>	<i>4-26-99</i>	<i>1433</i>
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <i>William E. Wright</i>	Date	Time	Courier Name: <i>Antone Express</i>	Date	Time
of: <i>O'Brien & Gere Engineers</i>	<i>4/23/99</i>	<i>1530</i>	<i>8556802026</i> *Attach delivery/courier receipt to Chain of Custody	<i>4/23/99</i>	<i>1530</i>
Relinquished by: _____	Date	Time	Received by: <i>Steve M. ...</i>	Date	Time
of: _____			of: <i>Quatterra</i>	<i>4/24/99</i>	<i>915</i>

**O'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO

Address: 5000 Cedar Plaza Parkway

Phone: (314) 842-4550

Job No. 3050.005

Sheet 2 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI				Collected By: (Signature) <i>[Signature]</i>			WD 4-26-99 1K3-ER
SAMPLE DESCRIPTION	pH	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #3S	12	4/23/99	0950	Water	Grab	1-P, 500 mL	Cyanide (CN) 264826
GMW #3S	1	4/23/99	0950	Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn), <i>Mn, Ni</i>
GMW #3S				Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #3S	1	4/23/99	0950	Water	Grab	1-P, 500 mL <i>SN</i>	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #3D	12	4/23/99	1025	Water	Grab	1-P, 500 mL	CN
GMW #3D	1	4/23/99	1025	Water	Grab	1-P, 500 mL	Total Pb and Zn, <i>Mn, Ni</i>
GMW #3D				Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #3D	1	4/23/99	1025	Water	Grab	1-P, 500 mL <i>SN</i>	Total Metals-Cd, Cr, Hg, Mn, Ni
GMW #4S	8	4/23/99	1210	Water	Grab	1-P, 500 mL	CN
GMW #4S	1	4/23/99	1210	Water	Grab	1-P, 500 mL	Total Pb and Zn, <i>Mn, Ni</i>
GMW #4S				Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #4S	1	4/23/99	1210	Water	Grab	1-P, 500 mL <i>SN</i>	Total Metals-Cd, Cr, Hg, Mn, Ni
Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb							

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

2.5°C

Relinquished by: _____	Date	Time	Received by: <i>[Signature]</i>	Date	Time
of: _____			of: <i>ATAS</i>	4/26/99	1432
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <i>[Signature]</i>	Date	Time	Courier Name: <i>Antoni Express</i>	Date	Time
of: <i>O'Brien & Gere Engineers</i>	4/23/99	1530	8556802024	4/23/99	1530
			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____	Date	Time	Received by: <i>[Signature]</i>	Date	Time
of: _____			of: <i>Quatterra</i>	4/24/99	915

**O'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO
Address: 5000 Cedar Plaza Parkway
Phone: (314) 842-4550

Job No. 3050.005
Sheet 3 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI				Collected By: (Signature) <u>William E. Wright</u>			WD 4-26-99 1435
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED	
GMW #4D <u>12</u>	<u>4/23/99</u>	<u>1140</u>	Water	Grab	1-P, 500 mL	Cyanide (CN)	<u>26432</u>
GMW #4D <u>1</u>	<u>4/23/99</u>	<u>1140</u>	Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn), <u>Mn, Ni</u>	
GMW #4D			Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})	
GMW #4D <u>1</u>	<u>4/23/99</u>	<u>1140</u>	Water	Grab	1-P, <u>500 mL</u> <u>20 mL</u>	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)	
GMW #3DA			Water	Grab	1-P, 500 mL	CN	
GMW #3DA			Water	Grab	1-P, 500 mL	Total Pb and Zn <u>Mn, Ni</u>	
GMW #3DA			Water	Grab	1-P, 500 mL	Cr ^{VI}	
GMW #3DA			Water	Grab	1-P, <u>500 mL</u> <u>20 mL</u>	Total Metals-Cd, Cr, Hg, Mn, Ni	
GMW #10 <u>12</u>	<u>4/23/99</u>	<u>1240</u>	Water	Grab	1-P, 500 mL	CN	<u>26432</u>
GMW #10 <u>1</u>	<u>4/23/99</u>	<u>1240</u>	Water	Grab	1-P, 500 mL	Total Pb and Zn <u>Mn, Ni</u>	
GMW #10			Water	Grab	1-P, 500 mL	Cr ^{VI}	
GMW #10 <u>1</u>	<u>4/23/99</u>	<u>1240</u>	Water	Grab	1-P, <u>500 mL</u> <u>20 mL</u>	Total Metals-Cd, Cr, Hg, Mn, Ni	
Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb							

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

2.5°C

Relinquished by: _____	Date	Time	Received by: <u>William E. Wright</u>	Date	Time
of: _____			of: _____	<u>4/26/99</u>	<u>1435</u>
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <u>William E. Wright</u>	Date	Time	Courier Name: <u>Arbore Express</u>	Date	Time
of: <u>O'Brien & Gere Engineers</u>	<u>4/23/99</u>	<u>1530</u>	<u>688 855 680 2026</u> *Attach delivery/courier receipt to Chain of Custody	<u>4/23/99</u>	<u>1530</u>
Relinquished by: _____	Date	Time	Received by: <u>Sue Holson</u>	Date	Time
of: _____			of: <u>Quanterra</u>	<u>4/24/99</u>	<u>915</u>

**D'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO

Address: 5000 Cedar Plaza Parkway

Phone: (314) 842-4550

Job No. 3050.005

Sheet 5 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI				Collected By: (Signature) <u>[Signature]</u> 4-26-99			
SAMPLE DESCRIPTION	pH	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #6S	12	4/22/99	1105	Water	Grab	1-P, 500 mL	Cyanide (CN) 26482
GMW #6S	1	4/22/99	1105	Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn), <u>Mn, Ni</u>
GMW #6S				Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #6S	1	4/22/99	1105	Water	Grab	1-P, <u>1L</u> <u>500mL</u>	Total Metals-Cd, Cr, mercury (Hg), <u>manganese (Mn), Nickel (Ni)</u>
GMW #6D	12	4/22/99	1135	Water	Grab	1-P, 500 mL	CN 26482
GMW #6D	1	4/22/99	1135	Water	Grab	1-P, 500 mL	Total Pb and Zn, <u>Mn, Ni</u>
GMW #6D				Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #6D	1	4/22/99	1135	Water	Grab	1-P, <u>1L</u> <u>500mL</u>	Total Metals-Cd, Cr, Hg, <u>Mn, Ni</u>
GMW #7	12	4/22/99	1020	Water	Grab	1-P, 500 mL	CN 26482
GMW #7	1	4/22/99	1020	Water	Grab	1-P, 500 mL	Total Pb and Zn, <u>Mn, Ni</u>
GMW #7				Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #7	1	4/22/99	1020	Water	Grab	1-P, <u>1L</u> <u>500mL</u>	Total Metals-Cd, Cr, Hg, <u>Mn, Ni</u>
Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb							

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

2.5

Relinquished by: _____ of: _____	Date _____ Time _____	Received by: <u>[Signature]</u> of: <u>ATAS</u> 4-26-99 1433	Date _____ Time _____
Relinquished by: _____ of: _____	Date _____ Time _____	Received by: _____ of: _____	Date _____ Time _____
Relinquished by: _____ of: _____	Date _____ Time _____	Received by: _____ of: _____	Date _____ Time _____
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <u>[Signature]</u> of: <u>D'Brien & Gere Engineers</u>	Date <u>4/23/99</u> Time <u>1530</u>	Courier Name: <u>Antenne Express</u> <u>8556802026</u> *Attach delivery/courier receipt to Chain of Custody	Date <u>4/23/99</u> Time <u>1530</u>
Relinquished by: <u>[Signature]</u> of: <u>Quanterra</u>	Date <u>4/26/99</u> Time <u>1410</u>	Received by: <u>[Signature]</u> of: <u>Quanterra</u>	Date <u>4/26/99</u> Time <u>915</u>

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

May 5, 1999

William E. Wright
O'Brien & Gere Engineers, Inc.
5000 Cedar Plaza Parkway
St. Louis, MO 63128

RE: ATAS #26450.01-#26450.14
#3050.005 - Inland Realty Co, Maryville, MO

Dear Mr. Wright:

Enclosed are the analytical reports for the samples received in our laboratory on April 22, 1999.

If, in your review, you should have any questions or require additional information, please call me at (314) 434-4570.

Thank you for choosing ATAS for your analytical needs.

Sincerely,



Ruseal Brewer
Project Manager

Enclosures

RB/jp

ATAS

"Professional Commitment"



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2645001MT(711)

DATE : 05-05-99

SAMPLE MATRIX : WATER
ATAS EPISODE : #26450
DATE SUBMITTED: 04-22-99
DATE ANALYZED : 04-22-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MO
METHOD REF. : SW 7196

RESULTS REPORTED IN mg/L OR PARTS PER MILLION (PPM)

HEXAVALENT CHROMIUM

CLIENT ID	ATAS ID	REPORTING LIMIT	RESULTS
GMW #2S	26450.01	0.05	ND
GMW #2D	26450.02	0.05	ND
GMW #3	26450.03	0.05	ND
GMW #3S	26450.04	0.05	ND
GMW #3D	26450.05	0.05	ND
GMW #4S	26450.06	0.05	ND
GMW #4D	26450.07	0.05	ND
GMW #10	26450.08	0.05	ND
GMW #5S	26450.09	0.05	ND
GMW #5D	26450.10	0.05	ND
GMW #6S	26450.11	0.05	ND
GMW #6D	26450.12	0.05	ND
GMW #9	26450.14	0.05	ND

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2645001MT(711)

DATE : 05-05-99

SAMPLE MATRIX : WATER
ATAS EPISODE : #26450
DATE SUBMITTED: 04-22-99
DATE ANALYZED : 04-27-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MO
METHOD REF. : SW 7196

RESULTS REPORTED IN mg/L OR PARTS PER MILLION (PPM)

HEXAVALENT CHROMIUM

CLIENT ID	ATAS ID	REPORTING LIMIT	RESULTS
GMW #7	26450.13	0.05	ND



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2645001MT(711)

DATE : 05-05-99

QA/QC

DESCRIPTION		PARAMETER	RESULTS
METHOD BLANK	04-22-99	HEXAVALENT CHROMIUM	<0.05 mg/L
METHOD BLANK	04-27-99	HEXAVALENT CHROMIUM	<0.05 mg/L
CONTROL SPIKE	04-22-99	HEXAVALENT CHROMIUM	101 % RECOVERY
CONTROL SPIKE	04-27-99	HEXAVALENT CHROMIUM	100 % RECOVERY

**O'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO

Address: 5000 Cedar Plaza Parkway

Phone: (314) 842-4550

Job No. 3050.005

Sheet 1 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI			Collected By: (Signature) <i>William E. Bright</i>			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #2S <i>LM</i>	<i>4-22-99</i>	<i>154</i>	Water	Grab	1-P, 500 mL	Cyanide (CN)
GMW #2S			Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn)
GMW #2S <i>26450.01</i>	<i>4/21/99</i>	<i>1430</i>	Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #2S			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #2D			Water	Grab	1-P, 500 mL	CN
GMW #2D			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #2D <i>26450.02</i>	<i>4/21/99</i>	<i>1440</i>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #2D			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
GMW #3			Water	Grab	1-P, 500 mL	CN
GMW #3			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #3 <i>26450.03</i>	<i>4/21/99</i>	<i>1340</i>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #3			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb						

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

Relinquished by: _____	Date	Time	Received by: - _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <i>William E. Bright</i>	Date	Time	Courier Name: <i>Antoine Exner</i>	Date	Time
of: <i>O'Brien & Gere</i>	<i>4/21/99</i>	<i>1630</i>	<i>855 6801326</i> *Attach delivery/courier receipt to Chain of Custody	<i>4/21/99</i>	<i>1630</i>
Relinquished by: _____	Date	Time	Received by: <i>T. Markey</i> <i>4.60</i>	Date	Time
of: _____			of: <i>ATAS</i>	<i>4/22/99</i>	<i>1030</i>

**O'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO

Address: 5000 Cedar Plaza Parkway

Phone: (314) 842-4550

Job No. 3050.005

Sheet 2 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI			Collected By: (Signature) <i>William E. Wright</i>			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #3S			Water	Grab	1-P, 500 mL	Cyanide (CN)
GMW #3S			Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn)
GMW #3S <i>26450.04</i>	<i>4/21/99</i>	<i>1410</i>	Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #3S			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #3D			Water	Grab	1-P, 500 mL	CN
GMW #3D			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #3D <i>26450.05</i>	<i>4/21/99</i>	<i>1420</i>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #3D			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
GMW #4S			Water	Grab	1-P, 500 mL	CN
GMW #4S			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #4S <i>26450.06</i>	<i>4/21/99</i>	<i>1350</i>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #4S			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb						

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <i>William E. Wright</i> of: <i>O'Brien & Gere</i>	<i>4/21/99</i>	<i>1630</i>	Courier Name: <i>Aurborne Express</i> <i>855 6801326</i> *Attach delivery/courier receipt to Chain of Custody	<i>4/21/99</i>	<i>1630</i>
Relinquished by: _____	Date	Time	Received by: <i>J. Manley</i> <i>4.60</i>	Date	Time
of: _____			of: <i>ATAS</i>	<i>4/22/99</i>	<i>1030</i>

**O'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO

Address: 5000 Cedar Plaza Parkway

Phone: (314) 842-4550

Job No. 3050.005

Sheet 3 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI			Collected By: (Signature) <i>[Signature]</i>			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #4D			Water	Grab	1-P, 500 mL	Cyanide (CN)
GMW #4D			Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn)
GMW #4D <i>26450.07</i>	<i>4/21/99</i>	<i>14:00</i>	Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #4D			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #3DA			Water	Grab	1-P, 500 mL	CN
GMW #3DA			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #3DA <i>4/5</i>			Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #3DA			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
GMW #10			Water	Grab	1-P, 500 mL	CN
GMW #10			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #10 <i>26450.08</i>	<i>4/21/99</i>	<i>15:10</i>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #10			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb <i>10 2 corr per Bill Wright 4-26-99</i>						

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <i>[Signature]</i>	Date	Time	Courier Name: <i>Auburne Express</i>	Date	Time
of: <i>O'Brien & Gere</i>	<i>4/21/99</i>	<i>1630</i>	<i>8556801306</i> *Attach delivery/courier receipt to Chain of Custody	<i>4/21/99</i>	<i>1630</i>
Relinquished by: _____	Date	Time	Received by: <i>F. M. Mervin</i> <i>4.60c</i>	Date	Time
of: _____			of: <i>ATAS</i>	<i>4/22/99</i>	<i>1030</i>

**O'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO

Address: 5000 Cedar Plaza Parkway

Phone: (314) 842-4550

Job No. 3050.005

Sheet 4 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI			Collected By: (Signature) <i>William E. Eppert</i>			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #5S			Water	Grab	1-P, 500 mL	Cyanide (CN)
GMW #5S			Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn)
GMW #5S <i>26450.09</i>	<i>4/21/99</i>	<i>1450</i>	Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #5S			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #5D			Water	Grab	1-P, 500 mL	CN
GMW #5D			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #5D <i>26450.10</i>	<i>4/21/99</i>	<i>1500</i>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #5D			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni

Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <i>William E. Eppert</i>	Date	Time	Courier Name: <i>Anborne Express</i>	Date	Time
of: <i>O'Brien & Gere</i>	<i>4/21/99</i>	<i>1630</i>	<i>855 6801326</i> *Attach delivery/courier receipt to Chain of Custody	<i>4/21/99</i>	<i>1630</i>
Relinquished by: _____	Date	Time	Received by: <i>J. Mendenhall</i> <i>4.6°C</i>	Date	Time
of: _____			of: <i>ATAS</i>	<i>4/22/99</i>	<i>1030</i>

**O'BRIEN & GERE
ENGINEERS, INC.**

Office: St. Louis, MO

Address: 5000 Cedar Plaza Parkway

Phone: (314) 842-4550

Job No. 3050.005

Sheet 5 of 6

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI			Collected By: (Signature) <i>William E. Eppright</i>			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #6S	_____	_____	Water	Grab	1-P, 500 mL	Cyanide (CN)
GMW #6S	_____	_____	Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn)
GMW #6S <i>26450.11</i>	<i>4/21/99</i>	<i>1300</i>	Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #6S	_____	_____	Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #6D	_____	_____	Water	Grab	1-P, 500 mL	CN
GMW #6D	_____	_____	Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #6D <i>26450.12</i>	<i>4/21/99</i>	<i>1310</i>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #6D	_____	_____	Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
GMW #7	_____	_____	Water	Grab	1-P, 500 mL	CN
GMW #7	_____	_____	Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #7 <i>26450.13</i>	<i>4/21/99</i>	<i>1320</i>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #7	_____	_____	Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb						

¹Matrix = water, wastewater, air, sludge, sediment, etc.

²Type = grab, composite

³Containers = P - polyethylene; G - glass

Chemical Preservatives:

Metals - HNO₃ to pH 2

Cyanide - NaOH to pH 12

Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <i>William E. Eppright</i>	Date	Time	Courier Name: <i>Airborne Express</i>	Date	Time
of: <i>O'Brien & Gere</i>	<i>4/21/99</i>	<i>1630</i>	<i>8556801326</i> *Attach delivery/courier receipt to Chain of Custody	<i>4/21/99</i>	<i>1630</i>
Relinquished by: _____	Date	Time	Received by: <i>J. M. ... 4.60</i>	Date	Time
of: _____			of: <i>ATAS</i>	<i>4/22/99</i>	<i>1030</i>

Phone: (314) 842-4550

Sheet 6 of 6

Relinquished by: _____ of: _____	Date _____ _____	Time _____ _____	Received by:- _____ of: _____	Date _____ _____	Time _____ _____
Relinquished by: _____ of: _____	Date _____ _____	Time _____ _____	Received by: _____ of: _____	Date _____ _____	Time _____ _____
Relinquished by: _____ of: _____	Date _____ _____	Time _____ _____	Received by: _____ of: _____	Date _____ _____	Time _____ _____
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <u><i>[Signature]</i></u> of: <u><i>[Signature]</i></u>	Date <u>4/21/99</u>	Time <u>1630</u>	Courier Name: <u><i>[Signature]</i></u> <u>0855 6801326</u> *Attach delivery/courier receipt to Chain of Custody	Date <u>4/21/99</u>	Time <u>1630</u>
Relinquished by: _____ of: _____	Date _____ _____	Time _____ _____	Received by: <u><i>[Signature]</i></u> <u>4.62</u> of: <u>ATAS</u>	Date <u>4/22/99</u>	Time <u>1030</u>

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: Inland Realty Co.
Proj. Desc: Maryville, Missouri

Job No.: 3435.016.015
Certification NY No.: 10155R

Sample: M0293
Samp. Description: GMW #3 DA

Collected: 04/21/99 14:20 Matrix: Water
Received: 04/22/99 09:45

Parameter	Result Units	Method	Prepared Analyzed	QC Batch	Note
Chromium-Hexavalent	<.05 mg/L	7196A	04/22/99	042299W26	29

Notes:
29: Elevated detection limit due to matrix interference.

J-Estimated value

Authorized: 
Date: May 10, 1999 Monika Santucci

Office: St. Louis

Address: 5000 Cedar Plaza Parkway

Phone: 314-842-4550

CHAIN OF CUSTODY

3435. ⁰¹⁶~~013~~ 015

[illegible]

¹ Matrix = water, wastewater, air, sludge, sediment, etc.

² Type = grab, composite

Relinquished by: _____	Date _____	Time _____	Received by: _____	Date _____	Time _____
of: _____			of: _____		
Relinquished by: _____	Date _____	Time _____	Received by: _____	Date _____	Time _____
of: _____			of: _____		
Relinquished by: _____	Date _____	Time _____	Received by: _____	Date _____	Time _____
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex)	Date _____	Time _____	Courier Name: <u>Arbore</u>	Date _____	Time _____
Relinquished by: <u>Anthony E. Wright</u>	<u>4/21/99</u>	<u>1630</u>	<u>8556801422</u>	<u>4/21/99</u>	<u>1630</u>
of: <u>O'Brien & Gere</u>			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____	Date _____	Time _____	Received by: <u>Thomas J. Williams</u>	Date _____	Time _____
of: _____			of: <u>O'Brien & Gere Laboratories</u>	<u>4/22/99</u>	<u>0945</u>

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Inland Realty Co.
Proj. Desc: Maryville, Missouri

Job No.: 3435.016.015
Certification NY No.: 10155R

Sample: M0669
Samp. Description: GMW #3DA
Units: mg/L

Collected: 04/23/99
Received: 04/24/99
Matrix: Water
% Solids:
Number of analytes: 7

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut. Note
Cadmium	<.005	200.7	04/29/99	05/03/99	042999W1	1
Chromium	.006	200.7	04/29/99	05/03/99	042999W1	1
Lead	<.002	200.9	04/29/99	05/10/99	042999W1	1
Manganese	.61	200.7	04/29/99	05/03/99	042999W1	1
Mercury	<.0002	245.1	05/04/99	05/04/99	050499W1	1
Nickel	<.005	200.7	04/29/99	05/03/99	042999W1	1
Zinc	.02	200.7	04/29/99	05/03/99	042999W1	1

Notes:

J-Estimated value

Authorized: 
Date: May 12, 1999
Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: Inland Realty Co.
Proj. Desc: Maryville, Missouri

Job No.: 3435.016.015
Certification NY No.: 10155R

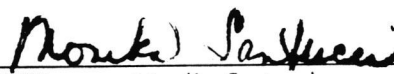
Sample: M0669
Samp. Description: GMW #3DA

Collected: 04/23/99 Matrix: Water
Received: 04/24/99 08:49

Parameter	Result	Qual	Units	Method	Prepared	Analyzed	QC Batch	Note
Total cyanide	<.005	U	mg/L	EPA 335.2	04/30/99	05/03/99	043099W22	

Notes:

U-Undetected at the reported level. J-the reported value is estimated.

Authorized: 
Date: May 5, 1999

Monika Santucci



O'BRIEN & GERE
ENGINEERS, INC.

Job No. 3050.005

Sheet 1 of 1

1561

Office: St. Louis

Address: 5000 Cedar Plaza Parkway

Phone: 314-842-4550

CHAIN OF CUSTODY

3435.016.015

CLIENT: <u>Inland Realty</u>			COLLECTED BY:			
LOCATION: <u>Maryville, MO</u>			(Signature) <u>William E. Wright</u>			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers	ANALYSIS REQUESTED
<u>GMW#3DA</u>	<u>8/23/99</u>	<u>1025</u>	<u>water</u>	<u>grab</u>	<u>1</u>	<u>Mn, Ni, Pb, Zn</u>
<u>GMW#3DA</u>	<u>8/23/99</u>	<u>1025</u>	<u>water</u>	<u>grab</u>	<u>1</u>	<u>Cd, Cr, Hg</u>
<u>GMW#3DA</u>	<u>8/23/99</u>	<u>1025</u>	<u>water</u>	<u>grab</u>	<u>1</u>	<u>Cyanide</u>

¹ Matrix = water, wastewater, air, sludge, sediment, etc.

² Type = grab, composite

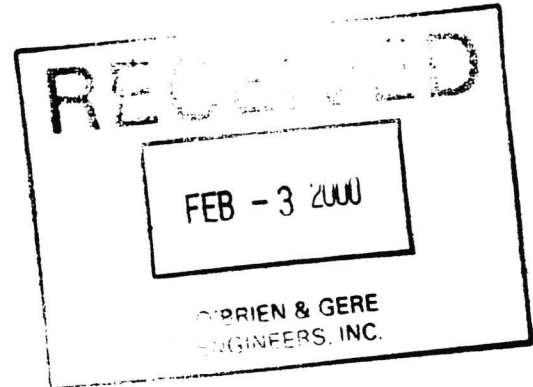
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g. Fed Ex)	Date	Time	Courier Name: <u>Antares Express</u>	Date	Time
Relinquished by: <u>William E. Wright</u>	<u>8/23/99</u>	<u>1530</u>	<u>8556801923</u>	<u>8/23/99</u>	<u>1530</u>
of: <u>O'Brien & Gere</u>			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____	Date	Time	Received by: <u>Maria E. Jackson</u>	Date	Time
of: _____			of: <u>O'Brien & Gere LAB</u>	<u>4/2/99</u>	<u>07:00</u>

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

February 1, 2000

William E. Wright
O'Brien & Gere Engineers, Inc.
5000 Cedar Plaza Parkway
St. Louis, MO 63128



RE: ATAS #28117.01-#28117.05
#3050.005 - Inland Realty Co, Maryville, Missouri

Dear Mr. Wright:

Enclosed is the revised report for the above captioned project received in our laboratory on October 28, 1999. I apologize for any inconvenience this may have caused.

If, in your review, you should have any questions or require additional information, please call.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff A. Carr".

Jeffrey A. Carr
Project Manager

Enclosures

JAC/jp

ATAS

"Professional Commitment"



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2811701MT(717)
DATE: 11-11-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28117.01
DATE SUBMITTED: 10-28-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #5S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.005	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-28-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-05-99	SW 6010
CHROMIUM	0.005	mg/L	ND	11-05-99	SW 6010
LEAD	0.002	mg/L	ND	11-05-99	SW 6010
MANGANESE	0.005	mg/L	1.04	11-05-99	SW 6010
NICKEL	0.005	mg/L	0.023	11-05-99	SW 6010
ZINC	0.010	mg/L	0.021	11-05-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-10-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2811701MT(717)
DATE: 11-11-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28117.02
DATE SUBMITTED: 10-28-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #5D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.005	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-28-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-05-99	SW 6010
CHROMIUM	0.005	mg/L	ND	11-05-99	SW 6010
LEAD	0.002	mg/L	ND	11-01-99	SW 6010
MANGANESE	0.020	mg/L	0.798	11-01-99	SW 6010
NICKEL	0.005	mg/L	ND	11-01-99	SW 6010
ZINC	0.010	mg/L	0.013	11-01-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-10-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2811701MT(717)
DATE: 11-11-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28117.03
DATE SUBMITTED: 10-28-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #4D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
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INORGANICS

TOTAL CYANIDE	0.005	mg/L	ND	11-02-99	SW 9010
---------------	-------	------	----	----------	---------

METALS

HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-28-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-05-99	SW 6010
CHROMIUM	0.005	mg/L	ND	11-05-99	SW 6010
LEAD	0.002	mg/L	ND	11-01-99	SW 6010
MANGANESE	0.005	mg/L	1.02	11-01-99	SW 6010
NICKEL	0.005	mg/L	0.022	11-01-99	SW 6010
ZINC	0.010	mg/L	0.021	11-01-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-10-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2811701MT(717)
DATE: 11-11-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28117.04
DATE SUBMITTED: 10-28-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #4S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.011	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	0.209	10-28-99	SW 7196
CADMIUM	0.005	mg/L	0.009	11-05-99	SW 6010
CHROMIUM	0.005	mg/L	0.009	11-05-99	SW 6010
LEAD	0.002	mg/L	ND	11-01-99	SW 6010
MANGANESE	0.005	mg/L	1.15	11-01-99	SW 6010
NICKEL	0.005	mg/L	ND	11-01-99	SW 6010
ZINC	0.010	mg/L	0.012	11-01-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-10-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2811701MT(717)
DATE: 11-11-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28117.05
DATE SUBMITTED: 10-28-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #9

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	0.021 J	10-28-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-05-99	SW 6010
CHROMIUM	0.005	mg/L	0.007	11-05-99	SW 6010
LEAD	0.002	mg/L	ND	11-01-99	SW 6010
MANGANESE	0.005	mg/L	1.53	11-01-99	SW 6010
NICKEL	0.005	mg/L	ND	11-01-99	SW 6010
ZINC	0.010	mg/L	0.010	11-01-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-10-99	SW 7470

J = ESTIMATED VALUE; BELOW REPORTING LIMIT
mg/L = PARTS PER MILLION (PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2811701MT(717
DATE: 11-11-99
REVISED DATE: 02-01-00

QA/QC

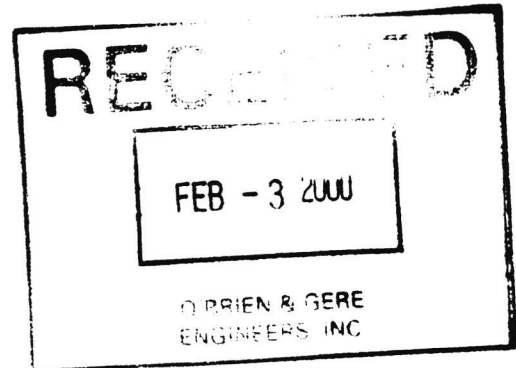
DESCRIPTION		PARAMETER	RESULTS	
METHOD BLANK	11-02-99	TOTAL CYANIDE	<0.005	mg/L
METHOD BLANK	10-28-99	HEXAVALENT CHROMIUM	<0.005	mg/L
METHOD BLANK	11-05-99	CADMIUM	<0.005	mg/L
METHOD BLANK	11-05-99	CHROMIUM	<0.005	mg/L
METHOD BLANK	11-01-99	LEAD	<0.002	mg/L
METHOD BLANK	11-01-99	MANGANESE	<0.005	mg/L
METHOD BLANK	11-01-99	NICKEL	<0.005	mg/L
METHOD BLANK	11-01-99	ZINC	<0.010	mg/L
METHOD BLANK	11-10-99	MERCURY	<0.0002	mg/L
CONTROL SPIKE	11-02-99	TOTAL CYANIDE	90 %	RECOVERY
CONTROL SPIKE	10-28-99	HEXAVALENT CHROMIUM	101 %	RECOVERY
CONTROL SPIKE	11-05-99	CADMIUM	109 %	RECOVERY
CONTROL SPIKE	11-05-99	CHROMIUM	105 %	RECOVERY
CONTROL SPIKE	11-01-99	LEAD	102 %	RECOVERY
CONTROL SPIKE	11-01-99	MANGANESE	104 %	RECOVERY
CONTROL SPIKE	11-01-99	NICKEL	106 %	RECOVERY
CONTROL SPIKE	11-01-99	ZINC	104 %	RECOVERY
CONTROL SPIKE	11-10-99	MERCURY	100 %	RECOVERY

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 • FAX (314) 434-0080

February 1, 2000

William E. Wright
O'Brien & Gere Engineers, Inc.
5000 Cedar Plaza Parkway
St. Louis, MO 63128



RE: ATAS #28130.01-#28130.06
#3050.005 - Inland Realty Co, Maryville, Missouri

Dear Mr. Wright:

Enclosed is the revised report for the above captioned project received in our laboratory on October 29, 1999. I apologize for any inconvenience this may have caused.

If, in your review, you should have any questions or require additional information, please call.

Thank you for choosing ATAS for your analytical needs.

Sincerely,

Jeffrey A. Carr
Project Manager

Enclosures

JAC/jp

ATAS

"Professional Commitment"



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2813001MT(717)
DATE: 11-12-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28130.01
DATE SUBMITTED: 10-29-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #2S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-29-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-09-99	SW 6010
CHROMIUM	0.005	mg/L	0.005	11-09-99	SW 6010
LEAD	0.002	mg/L	ND	11-02-99	SW 6010
MANGANESE	0.005	mg/L	2.39	11-02-99	SW 6010
NICKEL	0.005	mg/L	ND	11-02-99	SW 6010
ZINC	0.010	mg/L	0.050	11-02-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-11-99	SW 7470

mg/L = PARTS PER MILLION (PPM)
ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2813001MT(717)
DATE: 11-12-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28130.02
DATE SUBMITTED: 10-29-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #2D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-29-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-09-99	SW 6010
CHROMIUM	0.005	mg/L	0.005	11-09-99	SW 6010
LEAD	0.002	mg/L	ND	11-02-99	SW 6010
MANGANESE	0.005	mg/L	0.587	11-02-99	SW 6010
NICKEL	0.005	mg/L	ND	11-02-99	SW 6010
ZINC	0.010	mg/L	0.031	11-02-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-11-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2813001MT(71)
DATE: 11-12-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28130.03
DATE SUBMITTED: 10-29-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #3

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-29-99	SW 7196
CADMIUM	0.005	mg/L	0.006	11-09-99	SW 6010
CHROMIUM	0.005	mg/L	ND	11-09-99	SW 6010
LEAD	0.002	mg/L	ND	11-02-99	SW 6010
MANGANESE	0.005	mg/L	1.12	11-02-99	SW 6010
NICKEL	0.005	mg/L	ND	11-02-99	SW 6010
ZINC	0.010	mg/L	0.013	11-02-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-11-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2813001MT(717)
DATE: 11-12-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28130.04
DATE SUBMITTED: 10-29-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #3S

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.028	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-29-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-09-99	SW 6010
CHROMIUM	0.005	mg/L	ND	11-09-99	SW 6010
LEAD	0.002	mg/L	ND	11-02-99	SW 6010
MANGANESE	0.005	mg/L	0.673	11-02-99	SW 6010
NICKEL	0.005	mg/L	ND	11-02-99	SW 6010
ZINC	0.010	mg/L	0.015	11-02-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-11-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2813001MT(71
DATE: 11-12-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28130.05
DATE SUBMITTED: 10-29-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #3D

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	0.005	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-29-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-09-99	SW 6010
CHROMIUM	0.005	mg/L	ND	11-09-99	SW 6010
LEAD	0.002	mg/L	ND	11-02-99	SW 6010
MANGANESE	0.005	mg/L	0.620	11-02-99	SW 6010
NICKEL	0.005	mg/L	ND	11-02-99	SW 6010
ZINC	0.010	mg/L	ND	11-02-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-11-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2813001MT(717)
DATE: 11-12-99
REVISED DATE: 02-01-00

SAMPLE MATRIX : WATER
ATAS # : 28130.06
DATE SUBMITTED: 10-29-99
PROJECT : #3050.005 - INLAND REALTY CO, MARYVILLE, MISSOURI
SAMPLE ID : GMW #10

PARAMETER	REPORTING LIMIT	UNITS	RESULTS	DATE ANALYZED	METHOD REFERENCE
INORGANICS					
TOTAL CYANIDE	0.005	mg/L	ND	11-02-99	SW 9010
METALS					
HEXAVALENT CHROMIUM	0.005	mg/L	ND	10-29-99	SW 7196
CADMIUM	0.005	mg/L	ND	11-09-99	SW 6010
CHROMIUM	0.005	mg/L	ND	11-09-99	SW 6010
LEAD	0.002	mg/L	ND	11-02-99	SW 6010
MANGANESE	0.005	mg/L	ND	11-02-99	SW 6010
NICKEL	0.005	mg/L	ND	11-02-99	SW 6010
ZINC	0.010	mg/L	ND	11-02-99	SW 6010
MERCURY	0.0002	mg/L	ND	11-11-99	SW 7470

mg/L = PARTS PER MILLION (PPM)

ND = NOT DETECTED ABOVE REPORTING LIMIT



875 Fee Fee Road • Maryland Heights, MO 63043 • (314) 434-4570 - FAX (314) 434-0080

CLIENT: O'BRIEN & GERE ENGINEERS, INC.
5000 CEDAR PLAZA PARKWAY, SUITE 211
ST. LOUIS, MO 63128
ATTN: WILLIAM E. WRIGHT

REPORT: 2813001MT(717
DATE: 11-12-99
REVISED DATE: 02-01-00

QA/QC

DESCRIPTION		PARAMETER	RESULTS
METHOD BLANK	11-02-99	TOTAL CYANIDE	<0.005 mg/L
METHOD BLANK	10-29-99	HEXAVALENT CHROMIUM	<0.005 mg/L
METHOD BLANK	11-09-99	CADMIUM	<0.005 mg/L
METHOD BLANK	11-09-99	CHROMIUM	<0.005 mg/L
METHOD BLANK	11-02-99	LEAD	<0.002 mg/L
METHOD BLANK	11-02-99	MANGANESE	<0.005 mg/L
METHOD BLANK	11-02-99	NICKEL	<0.005 mg/L
METHOD BLANK	11-02-99	ZINC	<0.010 mg/L
METHOD BLANK	11-11-99	MERCURY	<0.0002 mg/L
CONTROL SPIKE	11-02-99	TOTAL CYANIDE	92 % RECOVERY
CONTROL SPIKE	10-29-99	HEXAVALENT CHROMIUM	104 % RECOVERY
CONTROL SPIKE	11-09-99	CADMIUM	98 % RECOVERY
CONTROL SPIKE	11-09-99	CHROMIUM	101 % RECOVERY
CONTROL SPIKE	11-02-99	LEAD	104 % RECOVERY
CONTROL SPIKE	11-02-99	MANGANESE	106 % RECOVERY
CONTROL SPIKE	11-02-99	NICKEL	107 % RECOVERY
CONTROL SPIKE	11-02-99	ZINC	105 % RECOVERY
CONTROL SPIKE	11-11-99	MERCURY	102 % RECOVERY

**O'Brien & Gere
Laboratories, Inc.****Analytical Results
Trace Metals**

Client: O'Brien & Gere Engineers, Inc.
Project: Inland Realty Co.
Proj. Desc: Maryville, Missouri

Job No.: 3435.016.015
Certification NY No.: 10155R

Sample: N4084
Samp. Description: GMW #3DA
Units: mg/L

Collected: 10/28/99 Matrix: Water
Received: 10/29/99 % Solids:

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Lead	<.002	200.7	11/01/99	11/02/99	110199W1	1	

Note: To: Bill Wright
Co: _____ Job #: _____
Fax# St. Louis
Pages: 3 From: Monika Santucci
OBG LABS (315) 437-0200/463-7554 Fax

J-estimated value

Authorized: Monika Santucci
Date: February 4, 2000 Monika Santucci

O'BRIEN & GERE
ENGINEERS, INC.Office: St Louis MOAddress: 5000 Cedar Plaza ParkwayTel: (314) 842-4550Job No. 3050Sheet 4 of 12

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI			Collected By: <u>3435-016-015</u> (Signature)			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #4D			Water	Grab	1-P, 500 mL	Cyanide (CN)
GMW #4D			Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn)
GMW #4D			Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #4D			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #3DA	10/28/99	1810	Water	Grab	1-P, 500 mL	CN
GMW #3DA	10/28/99	1810	Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #3DA	10/28/99	1810	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #3DA	10/28/99	1810	Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
GMW #10			Water	Grab	1-P, 500 mL	CN
GMW #10			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #10			Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #10			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni

Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb

¹Matrix = water, wastewater, air, sludge, sediment, etc.

Chemical Preservatives:

Metals - HNO₃ to pH 2²Type = grab, composite

Cyanide - NaOH to pH 12

³Containers = P - polyethylene; G - glass

Site GMW #3DA was the only site received

Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <u>William E. Wright</u>	Date	Time	Courier Name: <u>Arbonne Express</u>	Date	Time
of: <u>O'Brien & Gere</u>	<u>10/28/99</u>	<u>1945</u>	<u>1842766380</u>		
			*Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____	Date	Time	Received by: <u>Mark F. Jackson</u>	Date	Time
of: _____			of: <u>O'Brien & Gere Labs</u>	<u>10/28/99</u>	<u>1615</u>

File: 3050.00
1999

O'Brien & Gere Laboratories, Inc.

Analytical Results Trace Metals

Client: O'Brien & Gere Engineers, Inc.
Project: Inland Realty Co.
Proj. Desc: Maryville, Missouri

Job No.: 3435.016.015
Certification NY No.: 10155R

Sample: N4084
Samp. Description: GMW #3DA
Units: mg/L

Collected: 10/28/99 Matrix: Water
Received: 10/29/99 %Solids:
Number of analytes: 6

Parameter	Result	Method	Prepared	Analyzed	QC Batch	Dilut.	Note
Cadmium	<.005	200.7	11/01/99	11/02/99	110199W1	1	
Chromium	.006	200.7	11/01/99	11/02/99	110199W1	1	
Manganese	.60	200.7	11/01/99	11/02/99	110199W1	1	
Mercury	<.0002	245.1	11/11/99	11/11/99	111199W1	1	
Nickel	<.005	200.7	11/01/99	11/02/99	110199W1	1	
Zinc	.03	200.7	11/01/99	11/02/99	110199W1	1	

Notes:

J-Estimated value

Authorized: Monika Santucci
Date: November 12, 1999 Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results Wet Chemistry

Client: O'Brien & Gere Engineers, Inc.
Project: Inland Realty Co.
Proj. Desc: Maryville, Missouri

Job No.: 3435.016.015
Certification NY No.: 10155R

Sample: N4084
Samp. Description: GMW #3DA

Collected: 10/28/99 16:10 Matrix: Water
Received: 10/29/99 11:45

Parameter	Result	Qual	MDL	RL	Units	Method	Prepared	Analyzed	QC Batch	Note
Chromium-Hexavalent	<.01	U			mg/L	7196A		10/29/99	102999W13	
Total cyanide	<.005	U			mg/L	EPA 335.2	11/04/99	11/05/99	110499W23	

Notes:

U-Undetected at reported level. J-reported value is estimated.

Authorized: Monika Santucci
Date: November 6, 1999 Monika Santucci

O'BRIEN & GERE
ENGINEERS, INC.
Office: St. Louis, MO
Address: 5000 Cedar Plaza Parkway
Phone: (314) 842-4550

Job No. 3050.005

Sheet 4 of 131

CHAIN OF CUSTODY

Client: INLAND REALTY CO Location: MARYVILLE, MISSOURI			Collected By: (Signature) <u>3435-016-015</u>			
SAMPLE DESCRIPTION	Date	Time	Sample Matrix ¹	Sample Type ²	No. of Containers ³	ANALYSIS REQUESTED
GMW #4D			Water	Grab	1-P, 500 mL	Cyanide (CN)
GMW #4D			Water	Grab	1-P, 500 mL	Total lead (Pb) and zinc (Zn)
GMW #4D			Water	Grab	1-P, 500 mL	Hexavalent chromium (Cr ^{VI})
GMW #4D			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, mercury (Hg), manganese (Mn), Nickel (Ni)
GMW #3DA	<u>10/28/99</u>	<u>1810</u>	Water	Grab	1-P, 500 mL	CN
GMW #3DA	<u>10/28/99</u>	<u>1810</u>	Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #3DA	<u>10/28/99</u>	<u>1810</u>	Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #3DA	<u>10/28/99</u>	<u>1810</u>	Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
GMW #10			Water	Grab	1-P, 500 mL	CN
GMW #10			Water	Grab	1-P, 500 mL	Total Pb and Zn
GMW #10			Water	Grab	1-P, 500 mL	Cr ^{VI}
GMW #10			Water	Grab	1-P, 1 L	Total Metals-Cd, Cr, Hg, Mn, Ni
Maximum Method Detection Limits: CN, Cd, Cr, Mn, Ni - 5 ppb; Pb - 2 ppb; Hg - 0.2 ppb; Zn - 10 ppb						

¹Matrix = water, wastewater, air, sludge, sediment, etc.

Chemical Preservatives:

Metals - HNO₃ to pH 2

²Type = grab, composite

Cyanide - NaOH to pH 12

³Containers = P - polyethylene; G - glass

Site GMW #3DA was the only site received

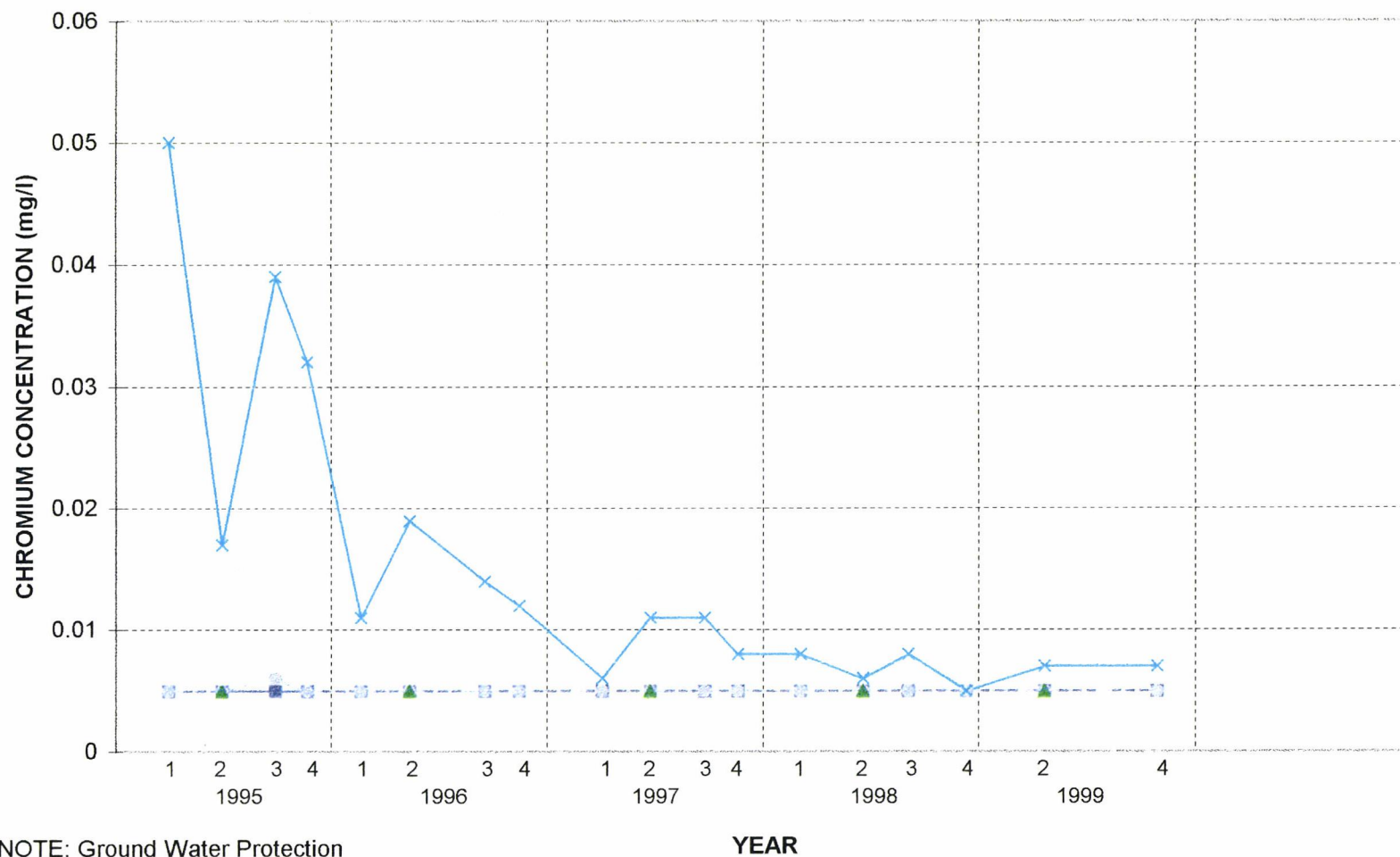
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Relinquished by: _____	Date	Time	Received by: _____	Date	Time
of: _____			of: _____		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by: <u>[Signature]</u>	Date	Time	Courier Name: <u>Arbonne Express</u>	Date	Time
of: <u>O'Brien & Gere</u>	<u>10/28/99</u>	<u>1945</u>	<u>1842766380</u> *Attach delivery/courier receipt to Chain of Custody		
Relinquished by: _____	Date	Time	Received by: <u>Mark F Jackson</u>	Date	Time
of: _____			of: <u>O'Brien & Gere LMS</u>	<u>10/29/99</u>	<u>11:45</u>

Appendix C

Concentration trend graphs – 1995 -1999

INLAND REALTY - MARYVILLE, MISSOURI

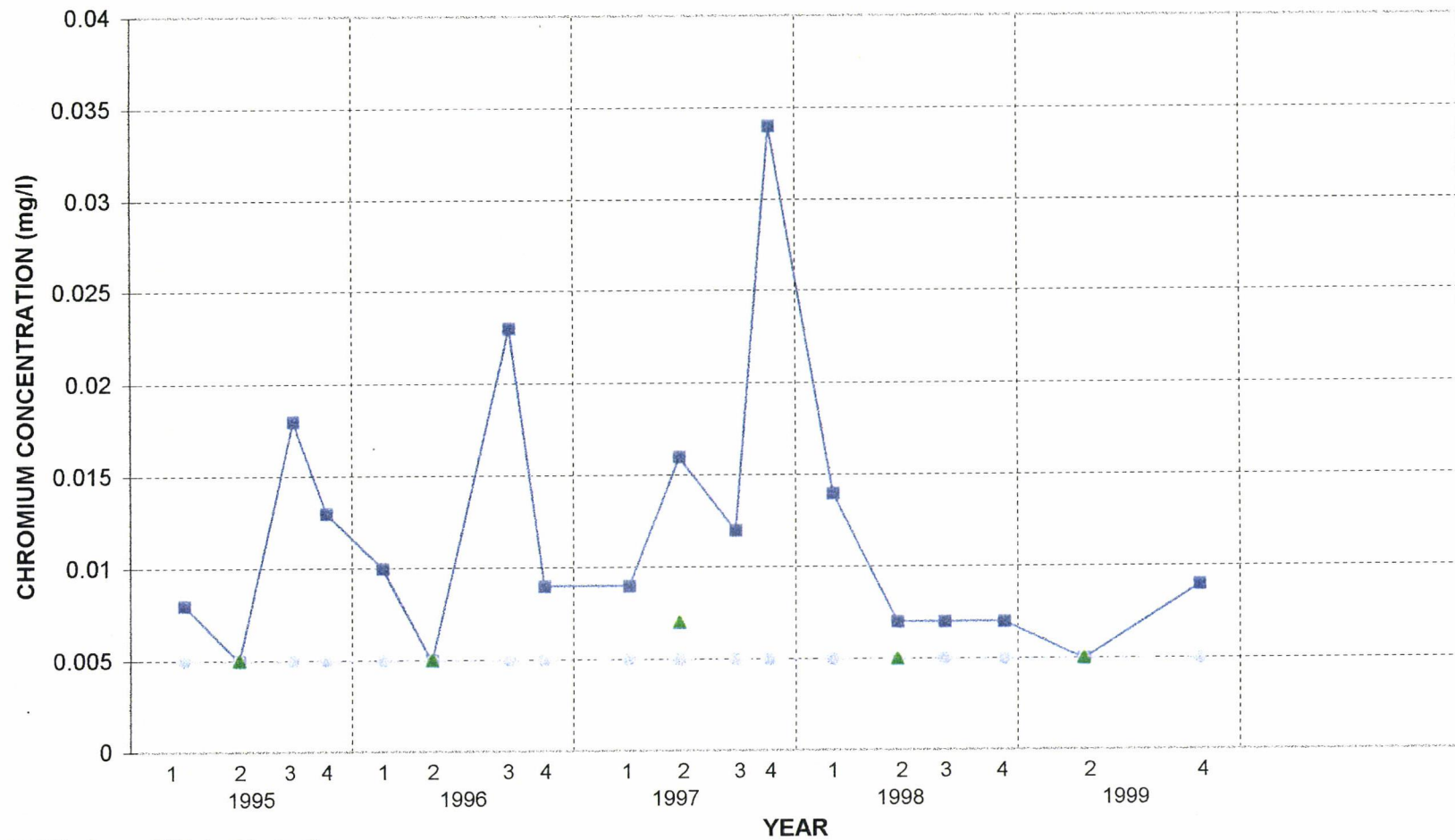
CHROMIUM CONCENTRATION - DEEP WELLS



NOTE: Ground Water Protection
Standard - 49 mg/l

INLAND REALTY - MARYVILLE, MISSOURI

CHROMIUM CONCENTRATION - SHALLOW WELLS

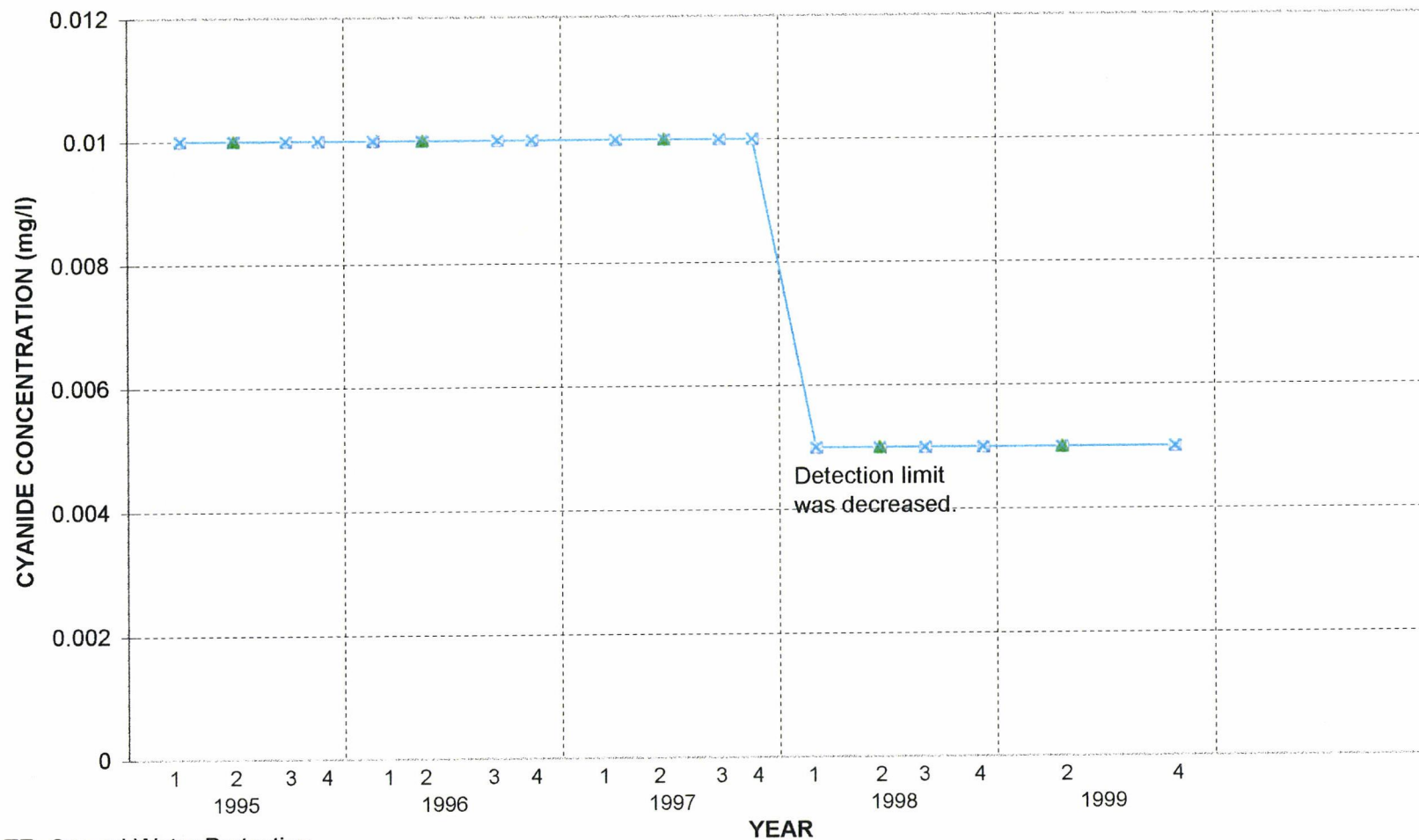


NOTE: Ground Water Protection
Standard - 49 mg/l

GMW #4S GMW #5S GMW #6S

INLAND REALTY - MARYVILLE, MISSOURI

CYANIDE CONCENTRATION - DEEP WELLS

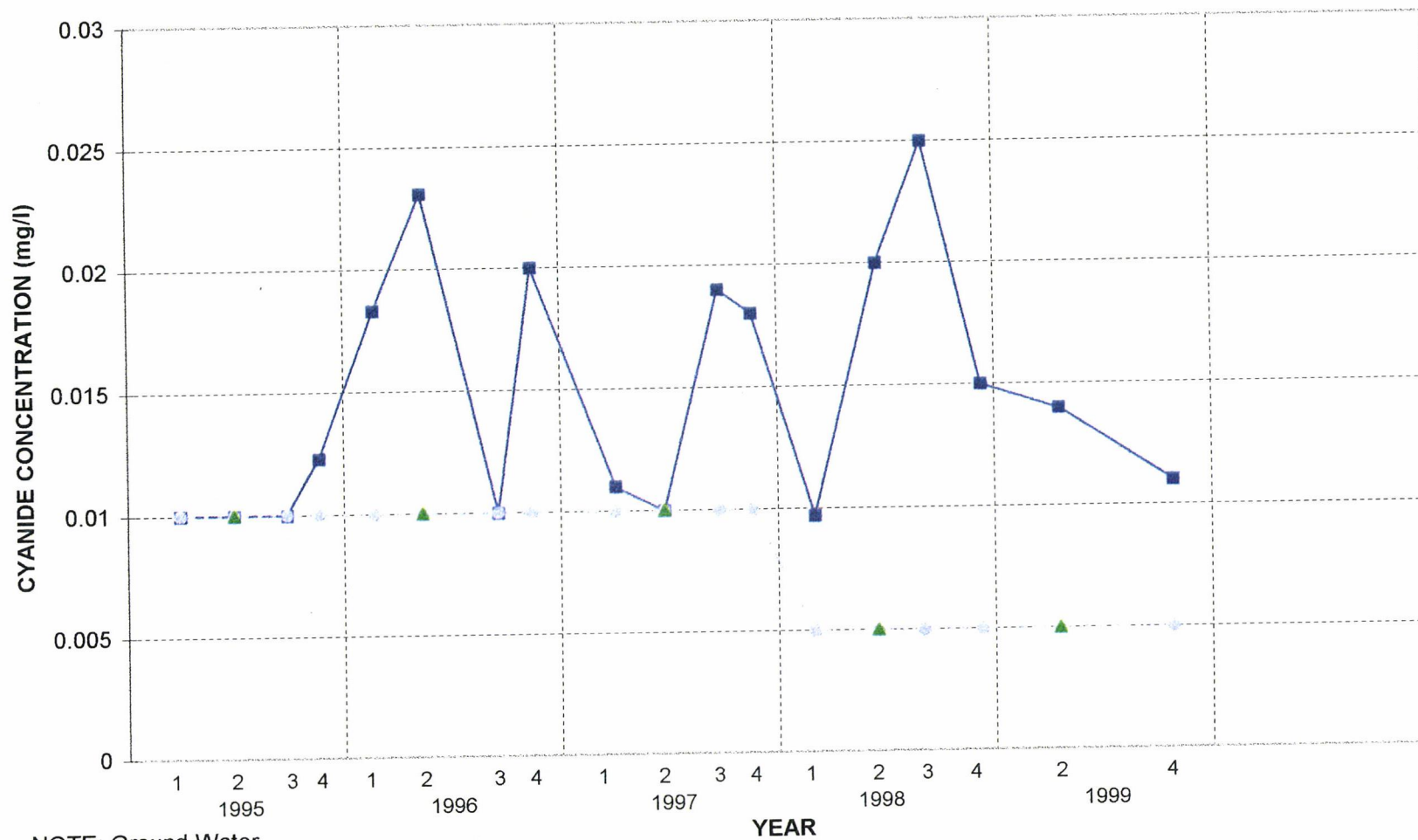


NOTE: Ground Water Protection
Standard - 40 mg/l

GMW #4D GMW #5D GMW #6D GMW #9

INLAND REALTY - MARYVILLE, MISSOURI

CYANIDE CONCENTRATION - SHALLOW WELLS

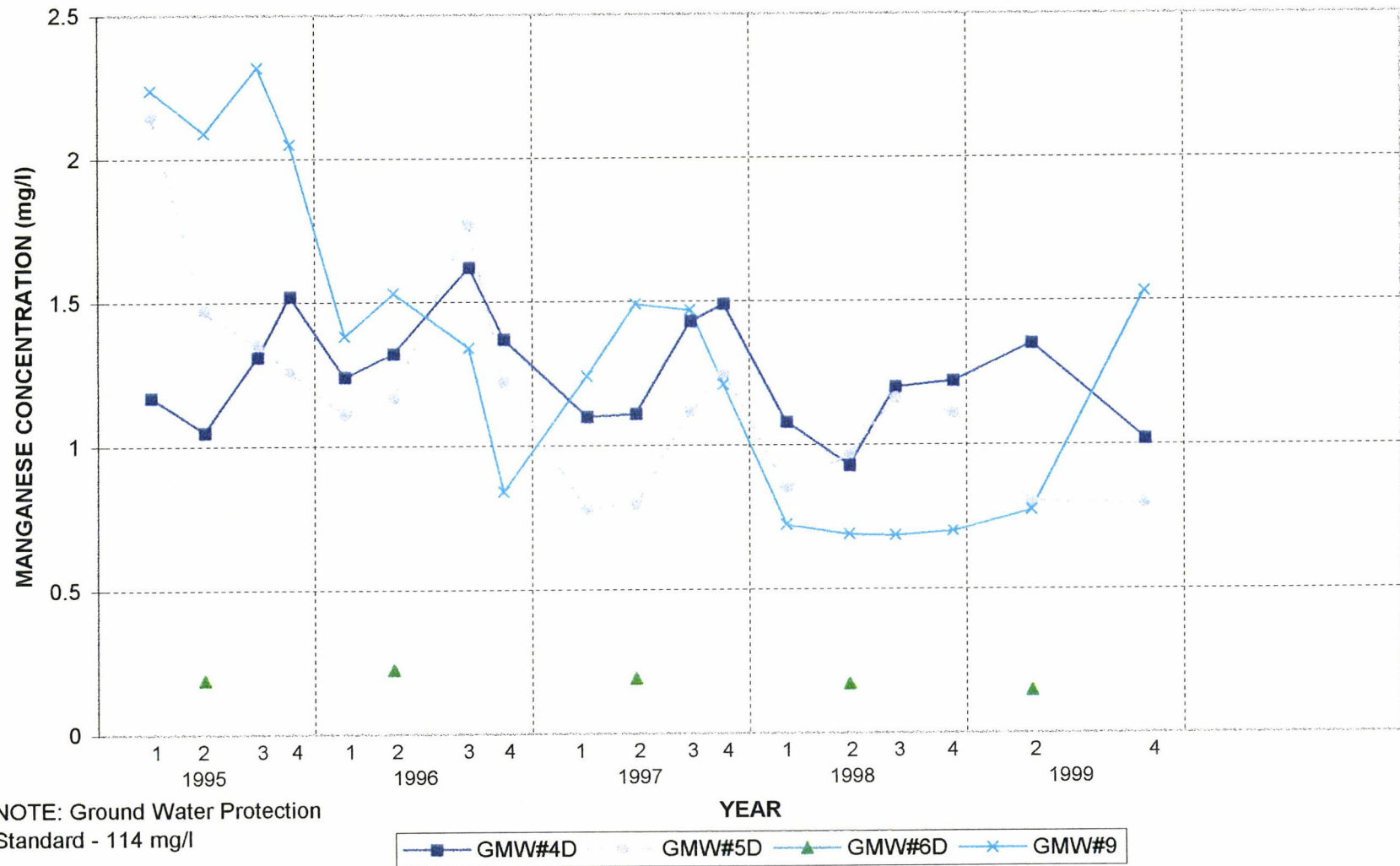


NOTE: Ground Water
Protection Standard - 40 mg/l

GMW #4S GMW #5S GMW #6S

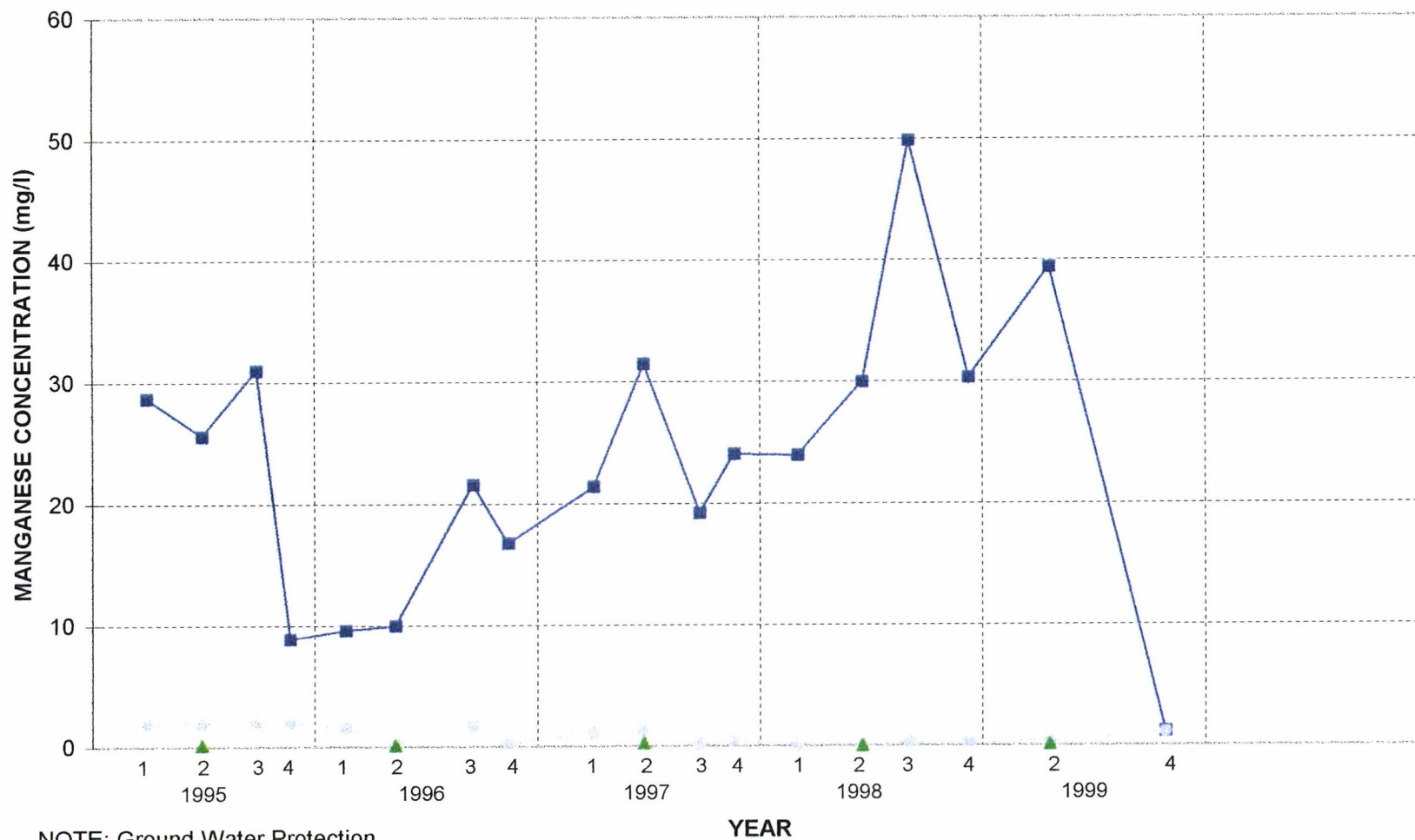
INLAND REALTY - MARYVILLE, MISSOURI

MANGANESE CONCENTRATION - DEEP WELLS



INLAND REALTY - MARYVILLE, MISSOURI

MANGANESE CONCENTRATION - SHALLOW WELLS

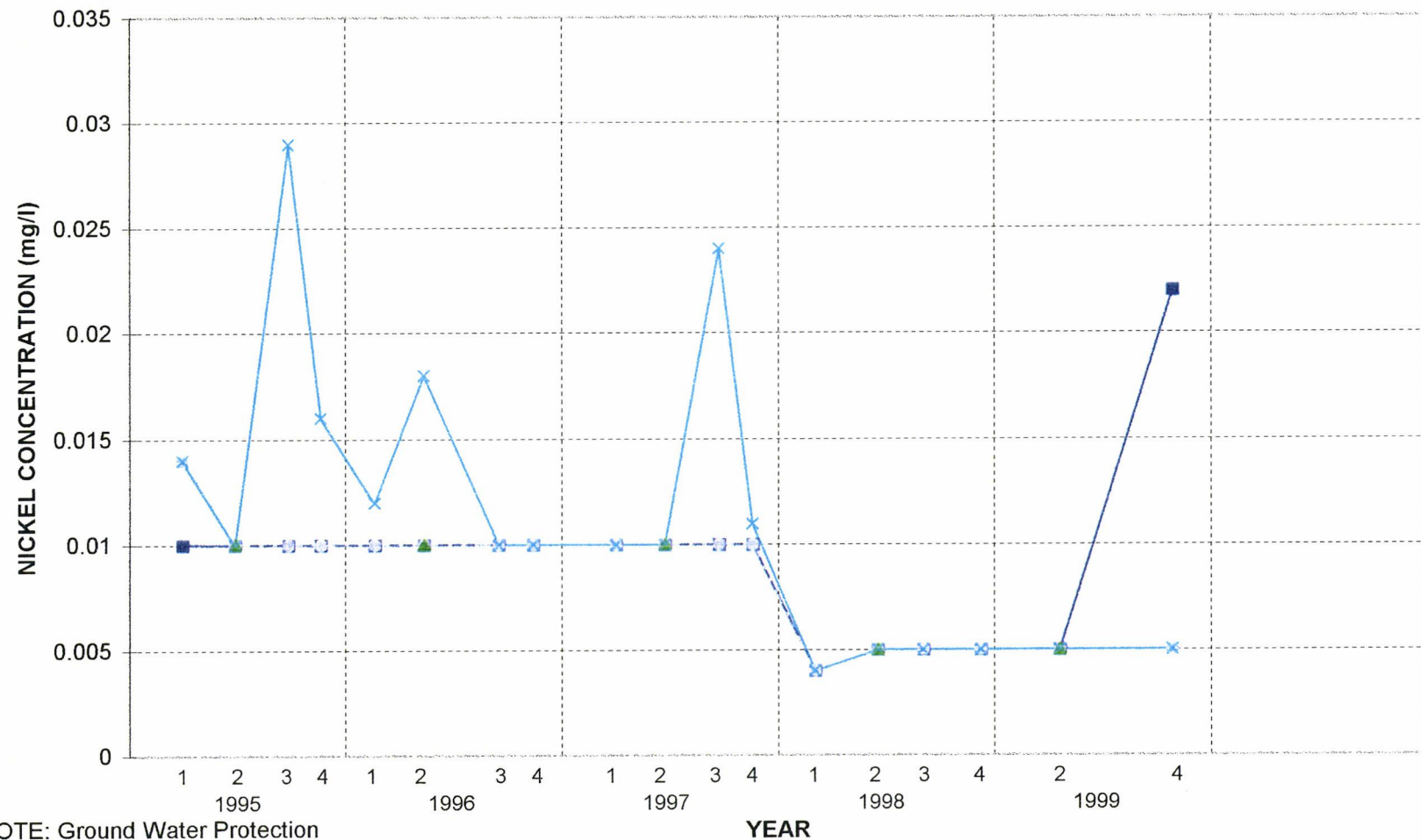


NOTE: Ground Water Protection
Standard - 114 mg/l

—■— GMW#4S —◇— GMW#5S —▲— GMW#6S

INLAND REALTY - MARYVILLE, MISSOURI

NICKEL CONCENTRATION - DEEP WELLS

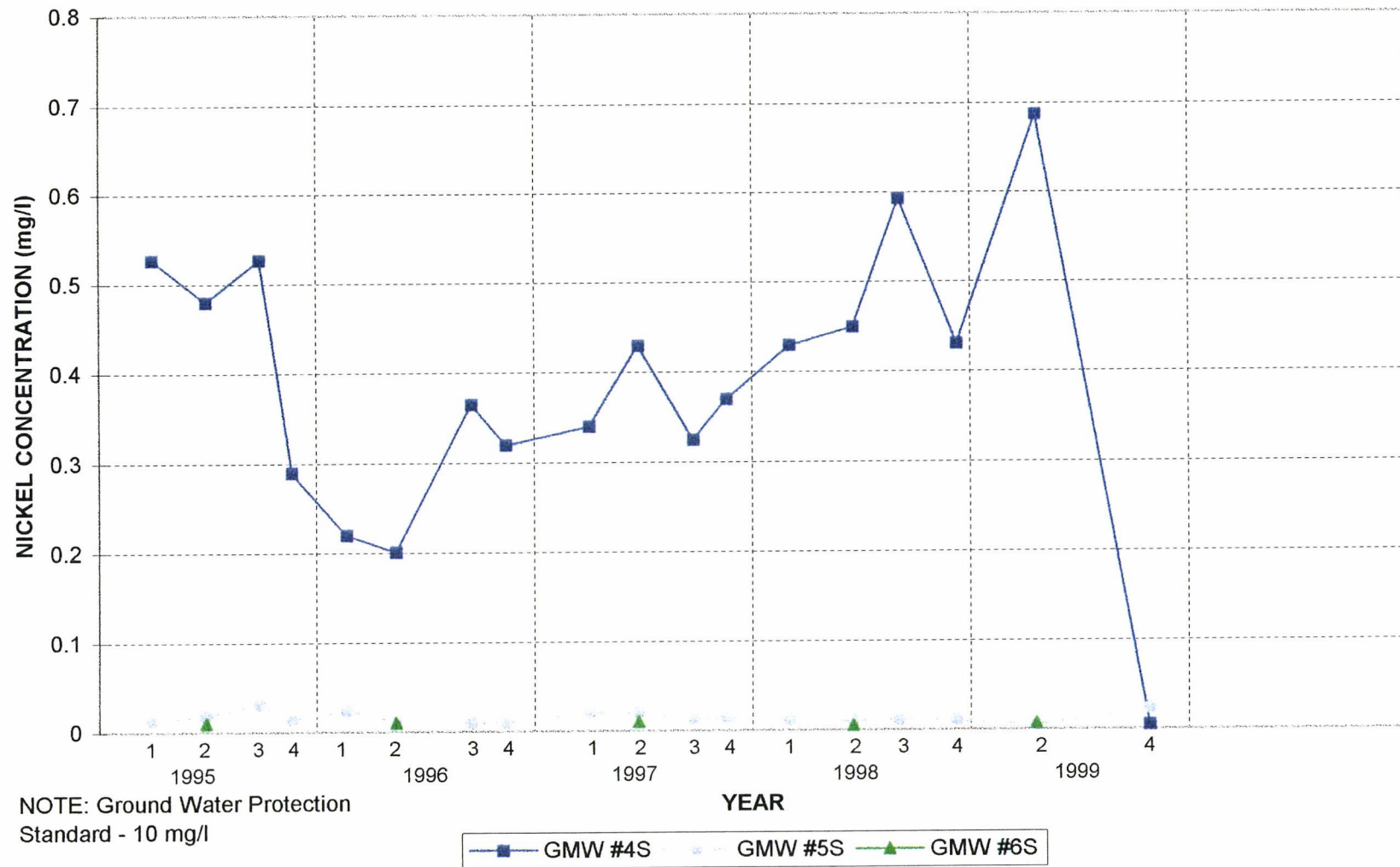


NOTE: Ground Water Protection
Standard - 10 mg/l

GMW #4D GMW #5D GMW #6D GMW #9

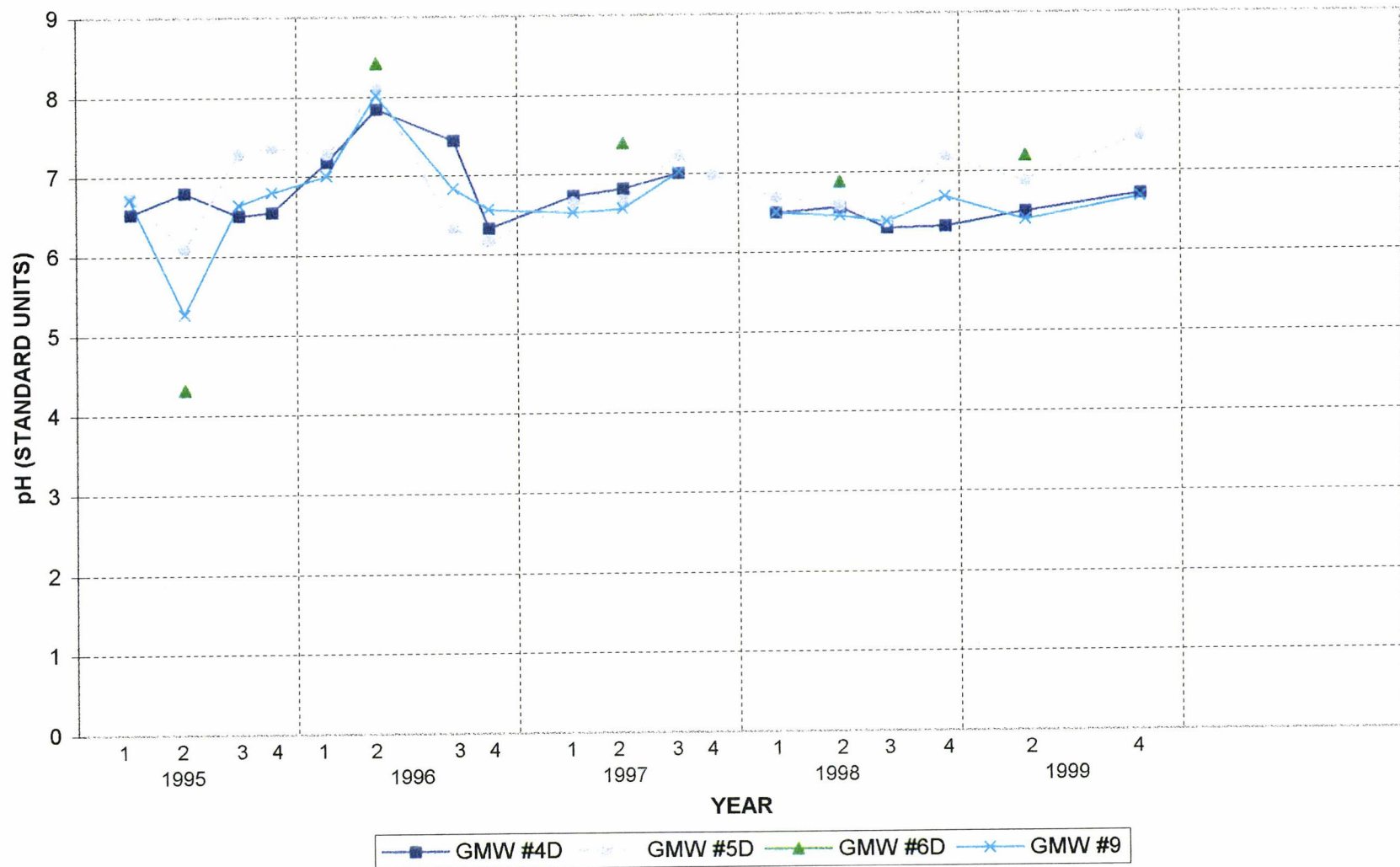
INLAND REALTY - MARYVILLE, MISSOURI

NICKEL CONCENTRATION - SHALLOW WELLS



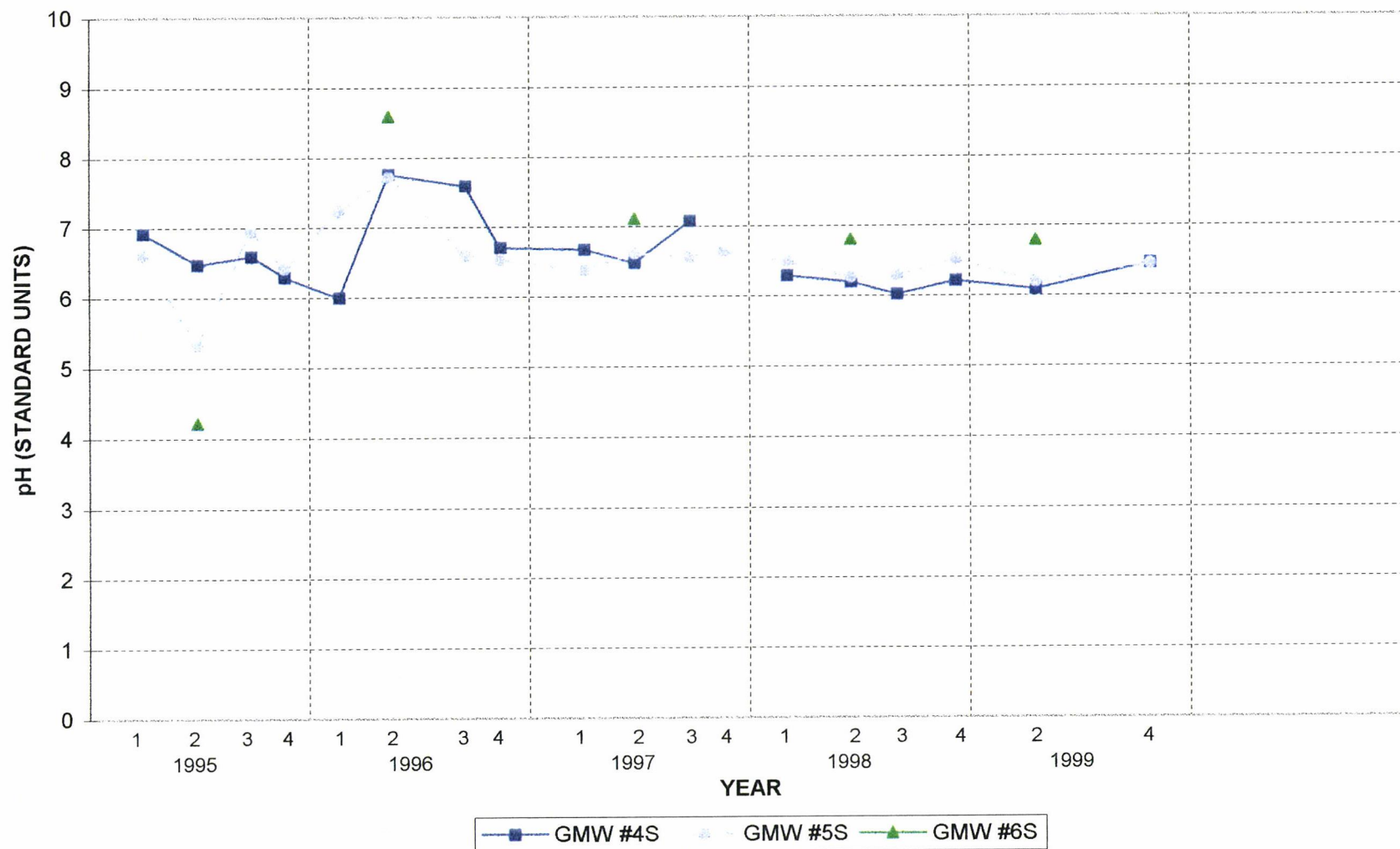
INLAND REALTY - MARYVILLE, MISSOURI

pH - DEEP WELLS



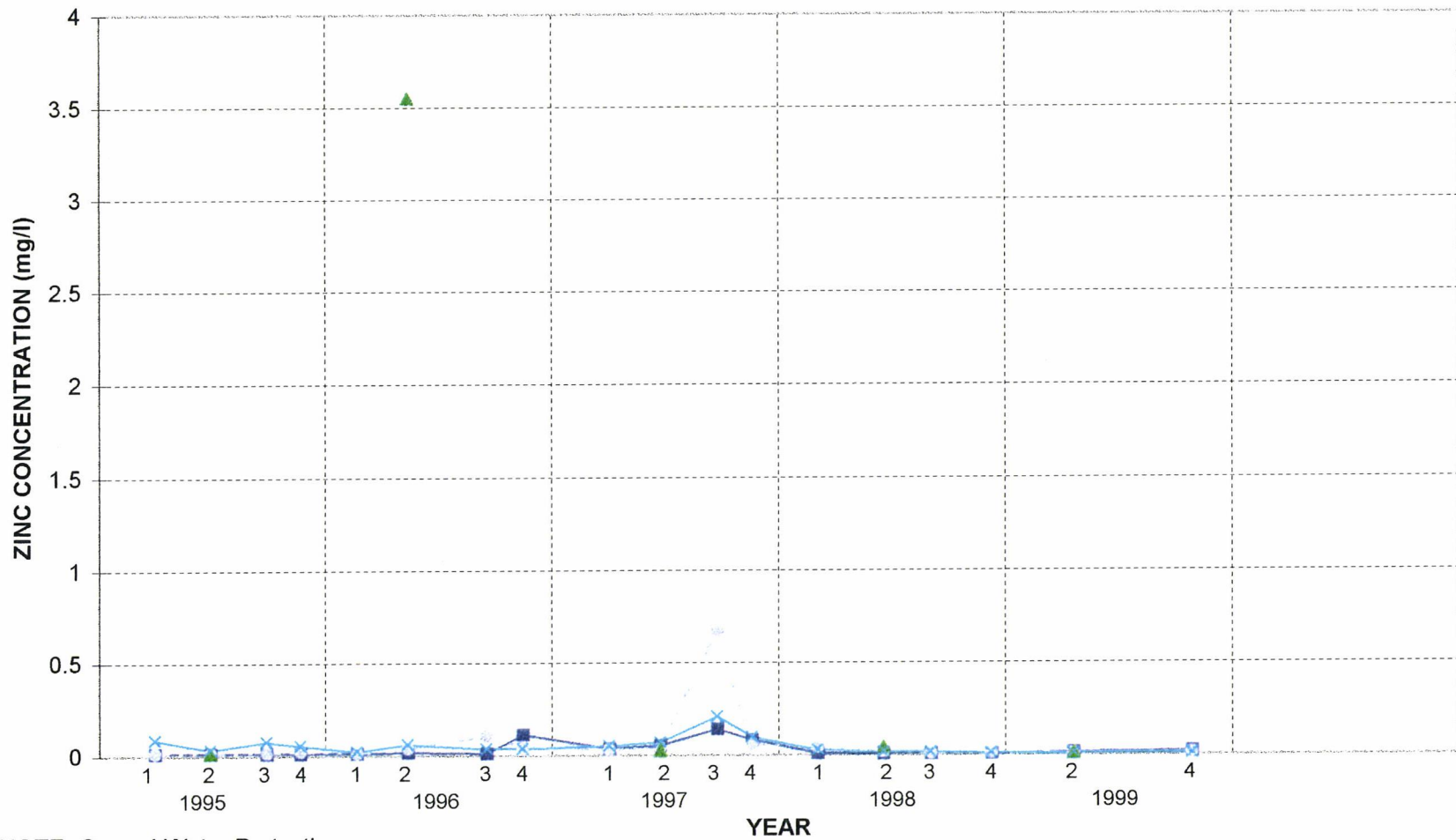
INLAND REALTY - MARYVILLE, MISSOURI

pH - SHALLOW WELLS



INLAND REALTY - MARYVILLE, MISSOURI

ZINC CONCENTRATION - DEEP WELLS

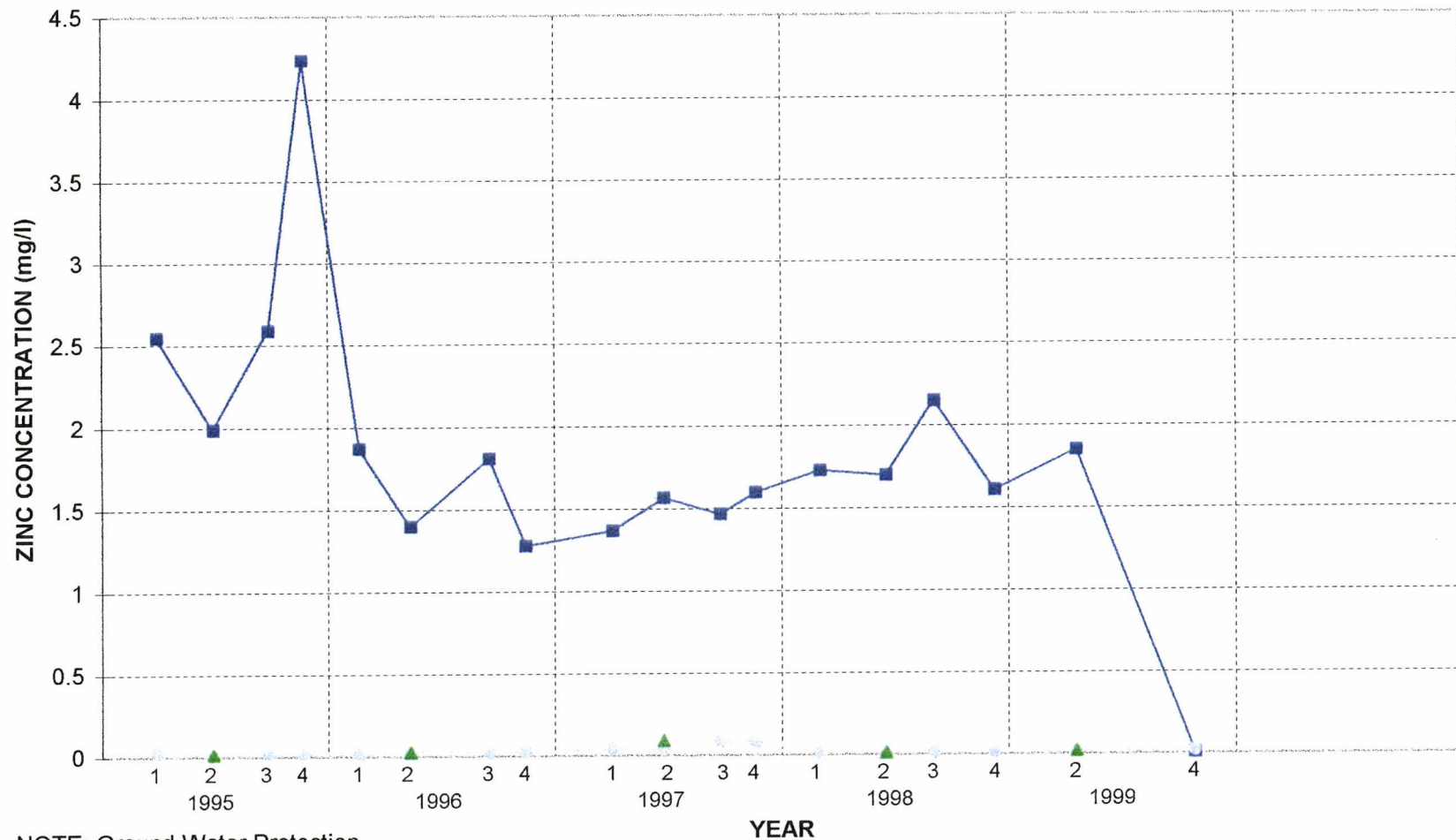


NOTE: Ground Water Protection
Standard - 1175 mg/l

—■— GMW #4D —●— GMW #5D —▲— GMW #6D —×— GMW #9

INLAND REALTY - MARYVILLE, MISSOURI

ZINC CONCENTRATION - SHALLOW WELLS



NOTE: Ground Water Protection
Standard - 1175 mg/l

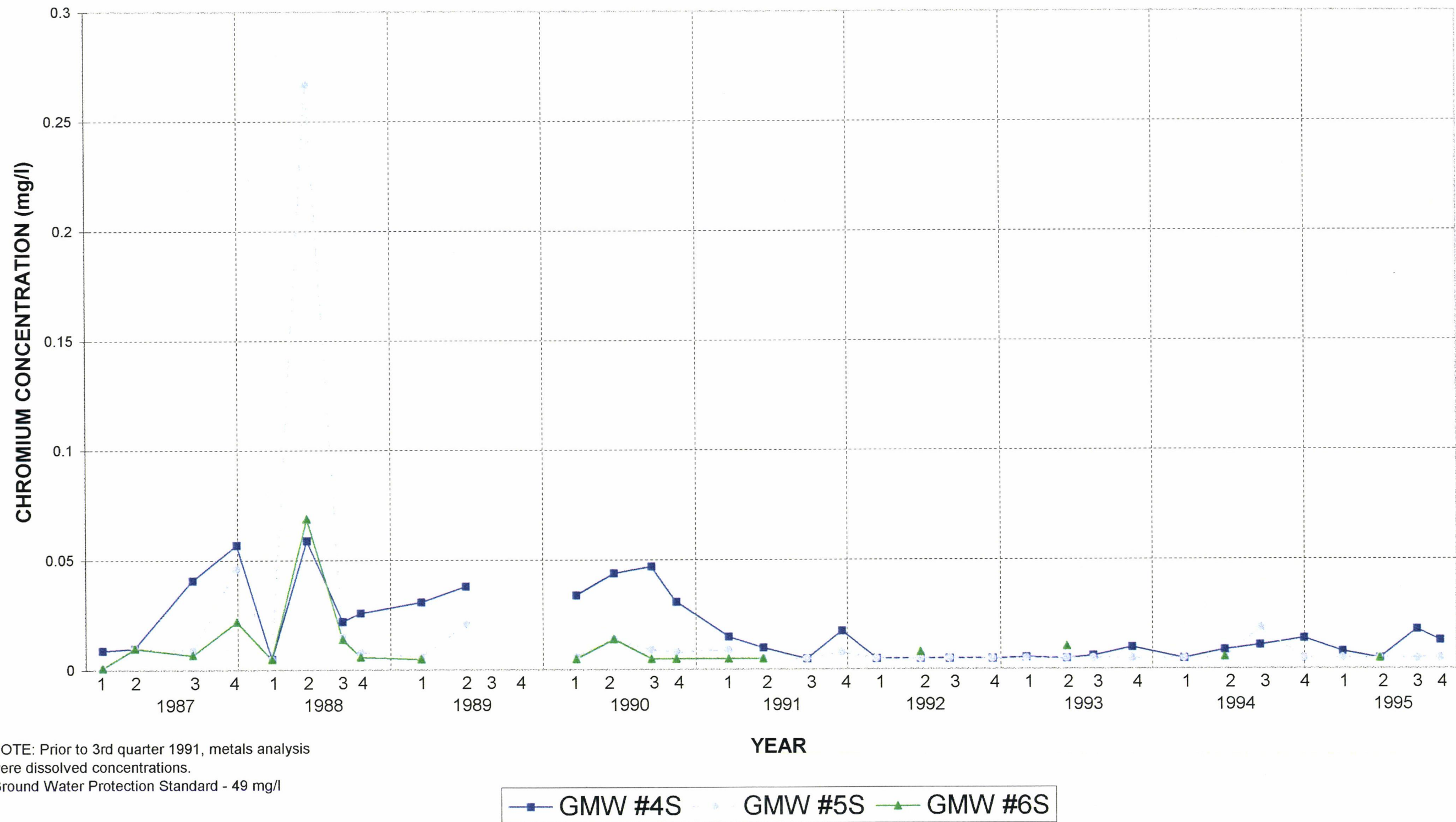
—■— GMW #4S —◇— GMW #5S —▲— GMW #6S

Appendix D

Concentration trend graphs – 1987-1995

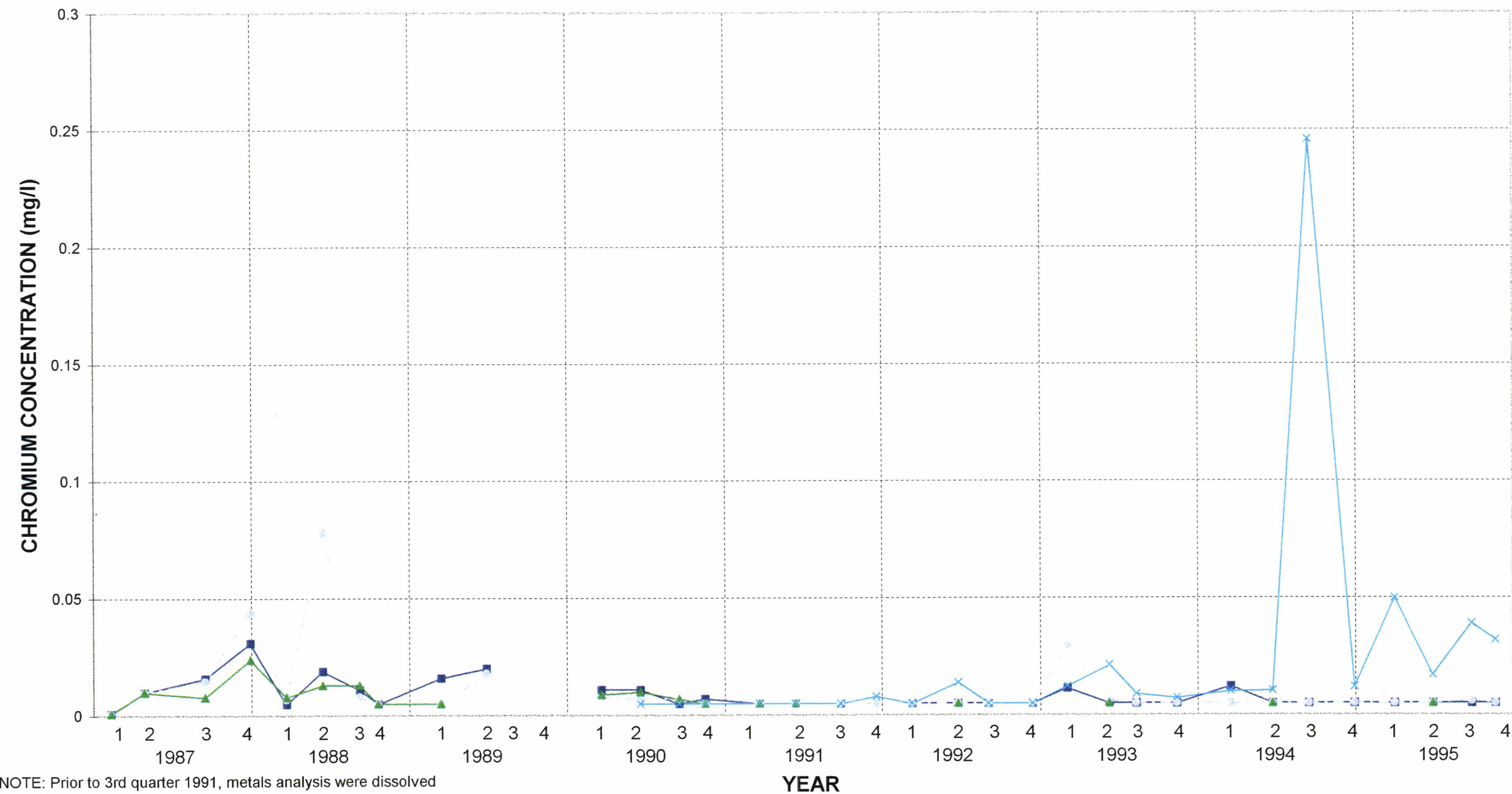
INLAND REALTY - MARYVILLE, MISSOURI

CHROMIUM CONCENTRATION - SHALLOW WELLS



INLAND REALTY - MARYVILLE, MISSOURI

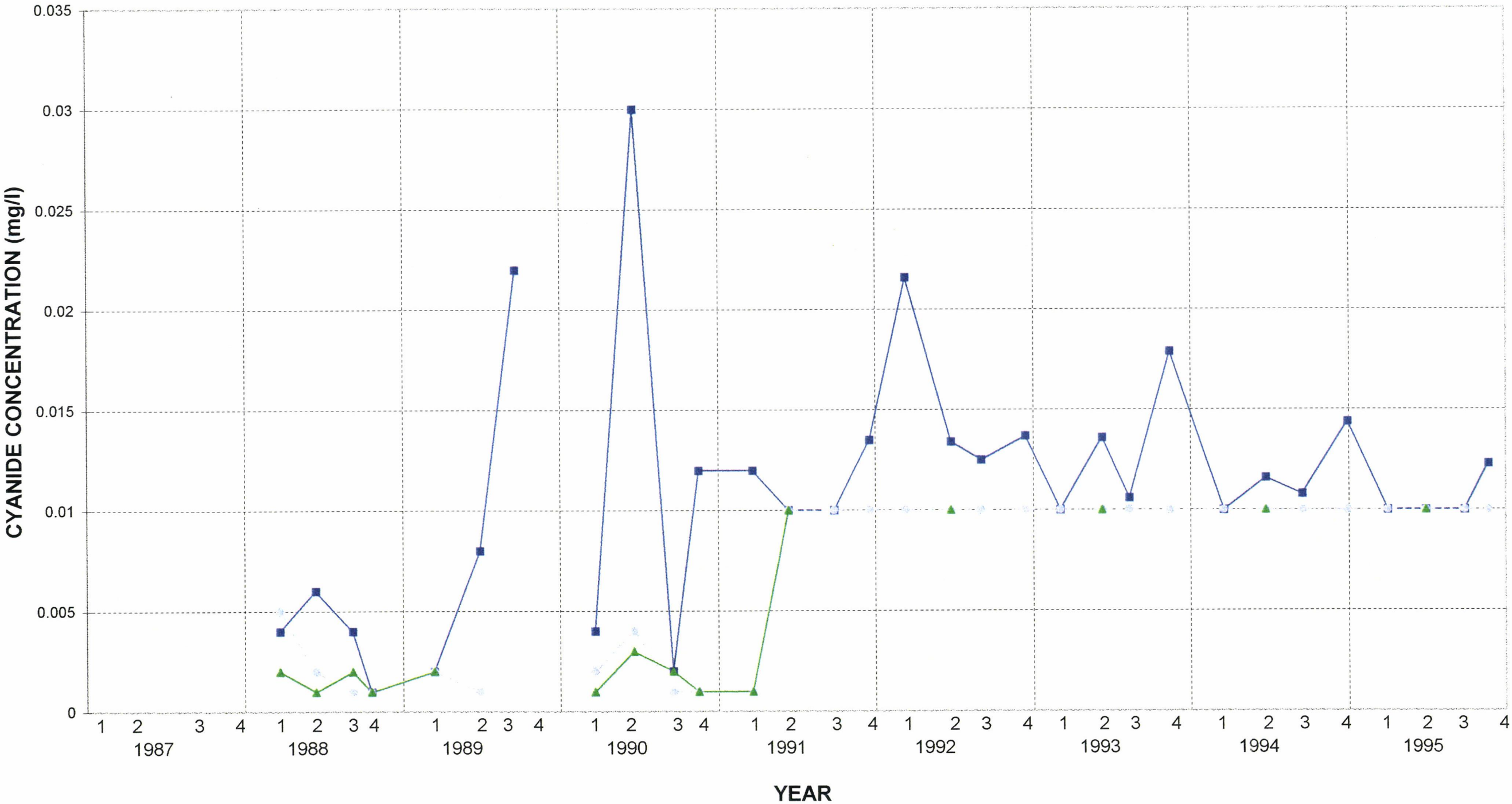
CHROMIUM CONCENTRATION - DEEP WELLS



GMW #4D GMW #5D GMW #6D GMW #9

INLAND REALTY - MARYVILLE, MISSOURI

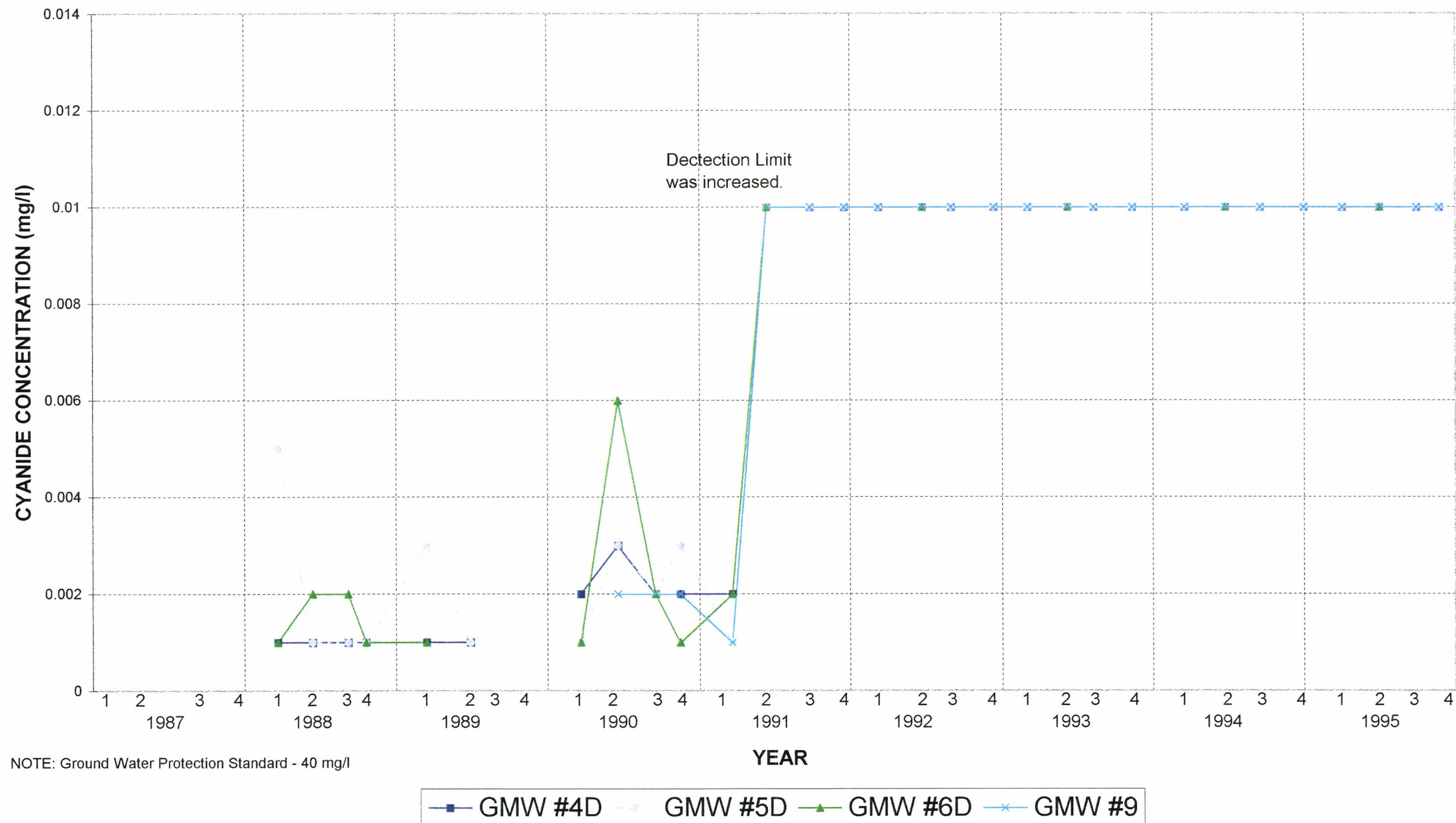
CYANIDE CONCENTRATION - SHALLOW WELLS



—■— GMW #4S - - - ♦ - - - GMW #5S —▲— GMW #6S

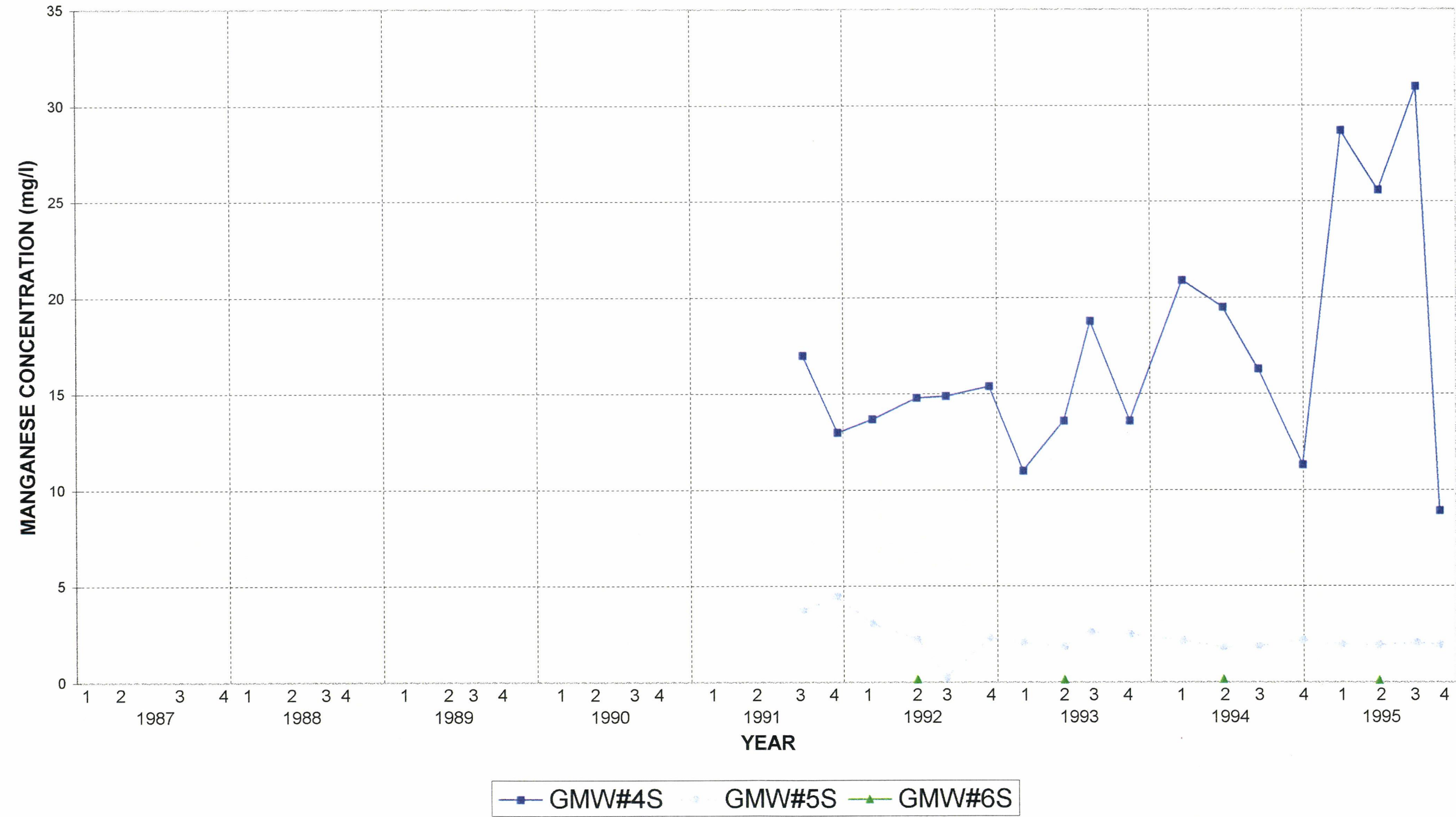
INLAND REALTY - MARYVILLE, MISSOURI

CYANIDE CONCENTRATION - DEEP WELLS



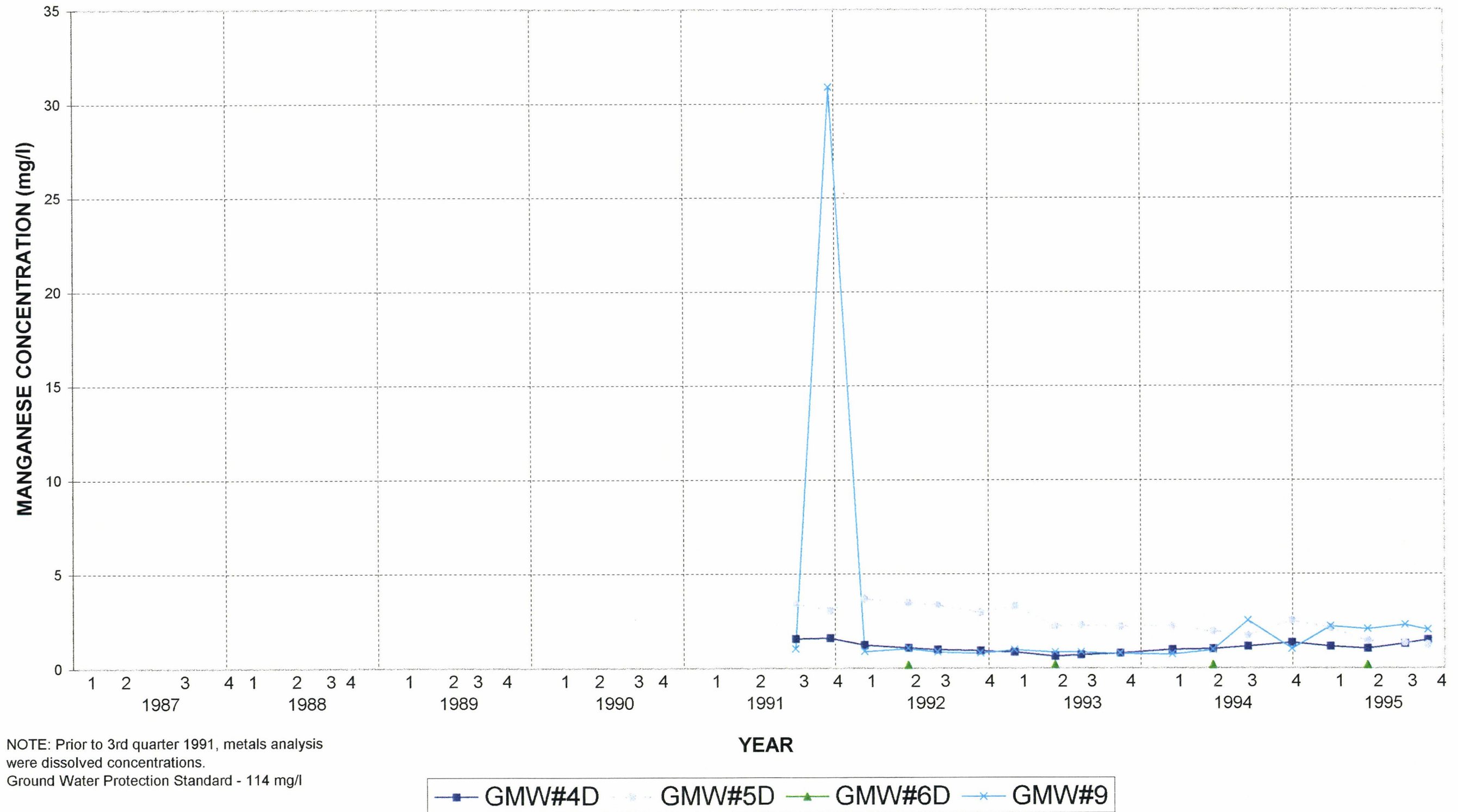
INLAND REALTY - MARYVILLE, MISSOURI

MANGANESE CONCENTRATION - SHALLOW WELLS



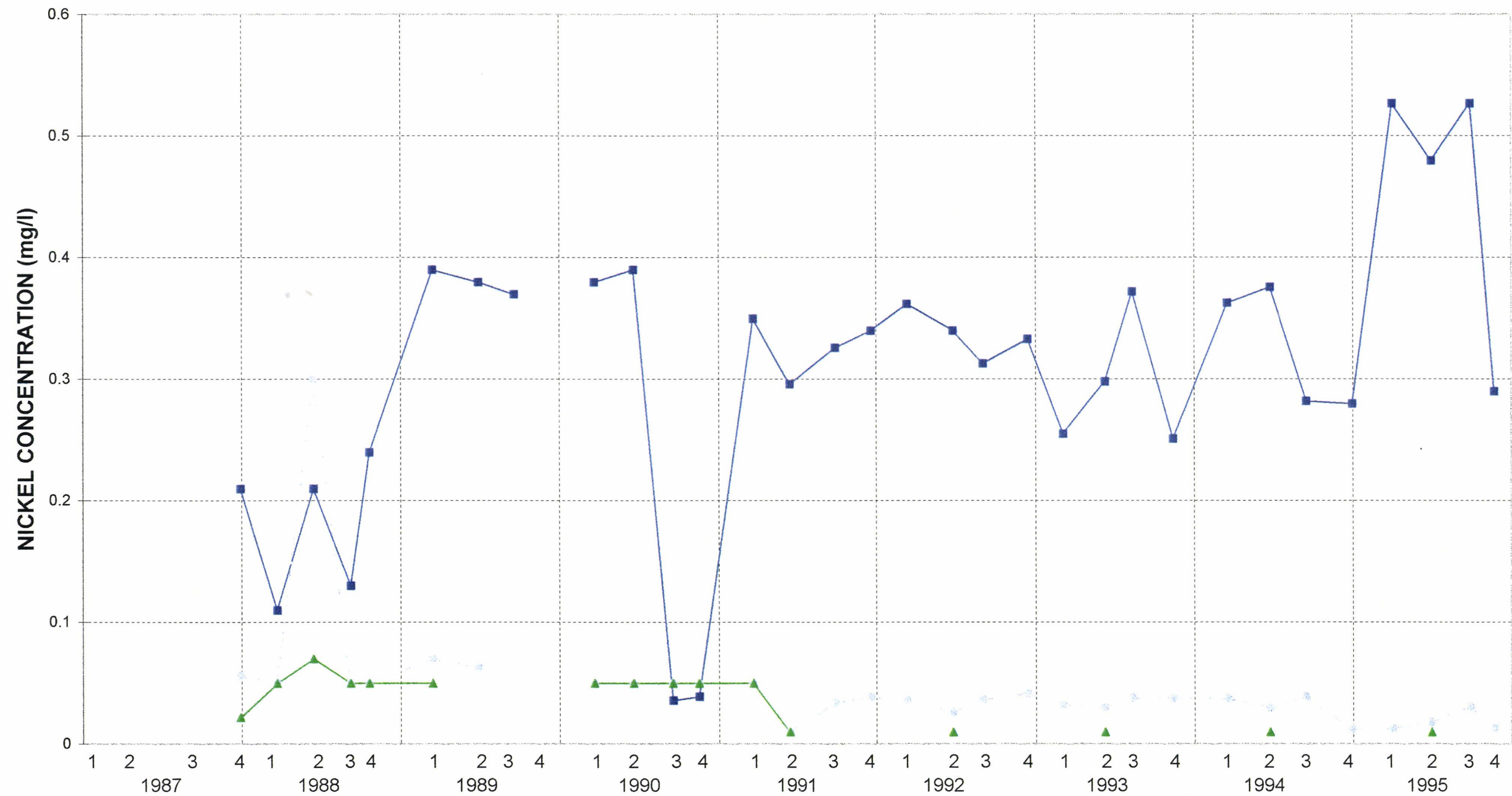
INLAND REALTY - MARYVILLE, MISSOURI

MANGANESE CONCENTRATION - DEEP WELLS



INLAND REALTY - MARYVILLE, MISSOURI

NICKEL CONCENTRATION - SHALLOW WELLS

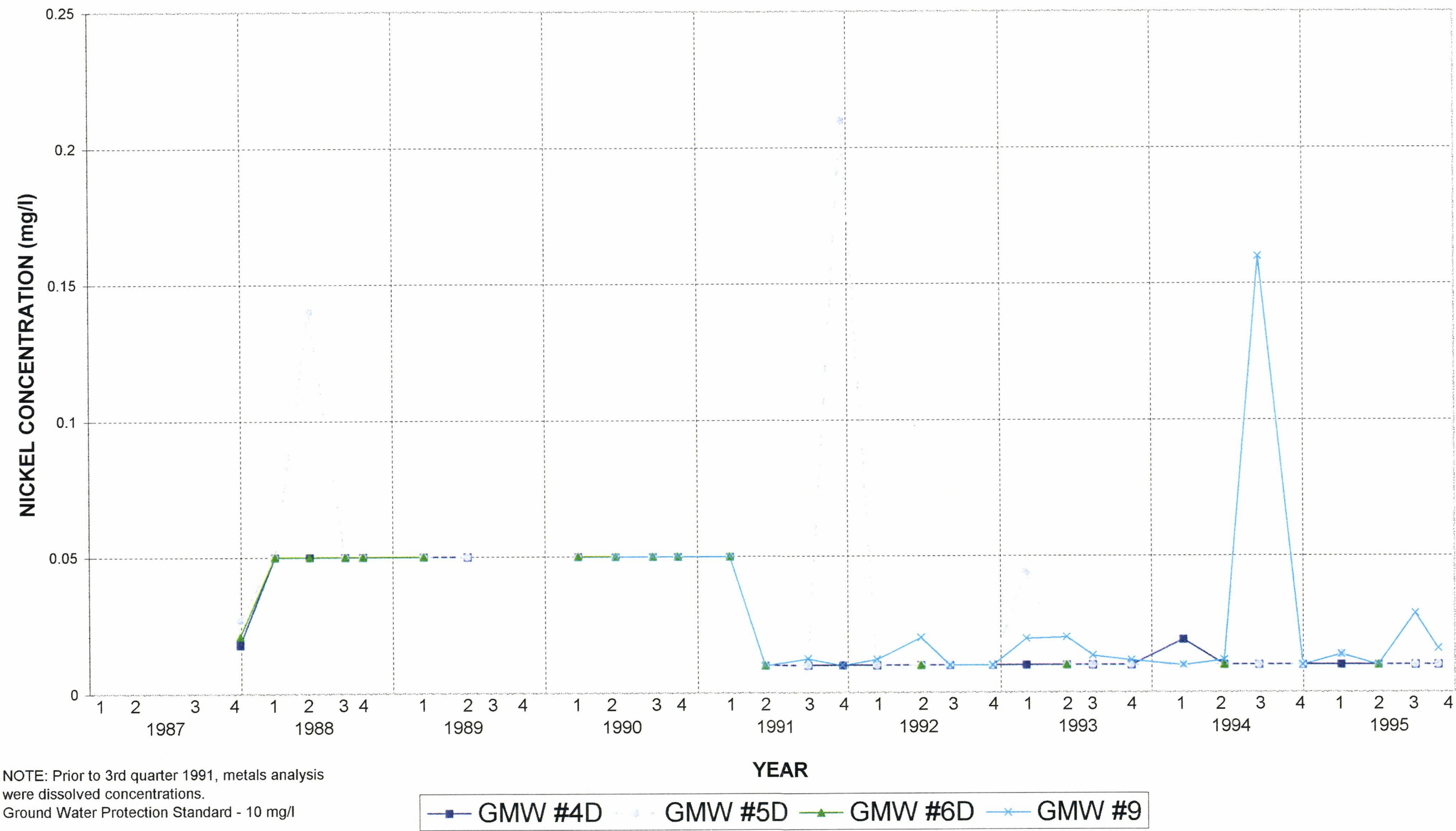


NOTE: Prior to 3rd quarter 1991, metals analysis were dissolved concentrations.
Ground Water Protection Standard - 10 mg/l

—■— GMW #4S —◆— GMW #5S —▲— GMW #6S

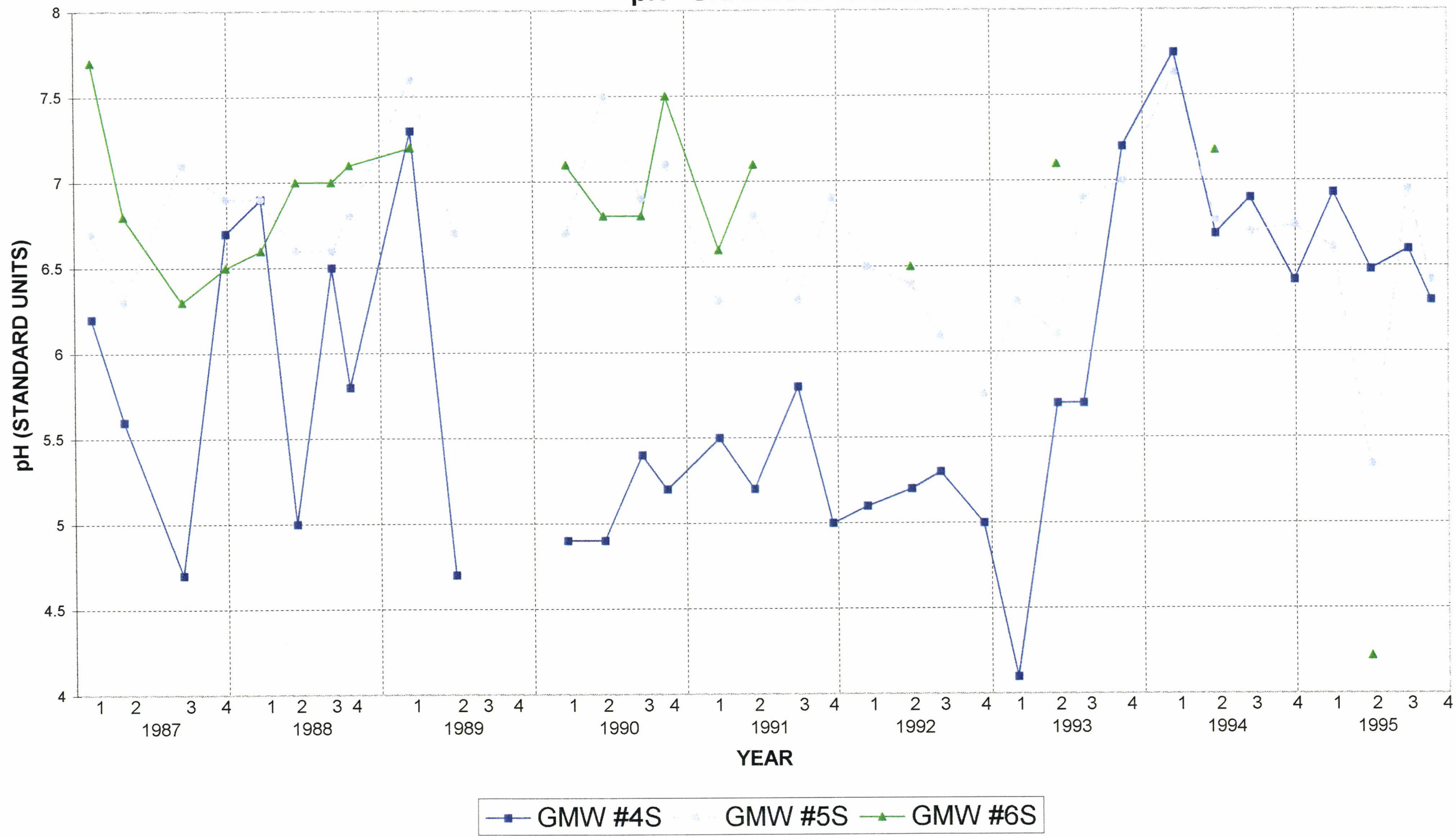
INLAND REALTY - MARYVILLE, MISSOURI

NICKEL CONCENTRATION - DEEP WELLS



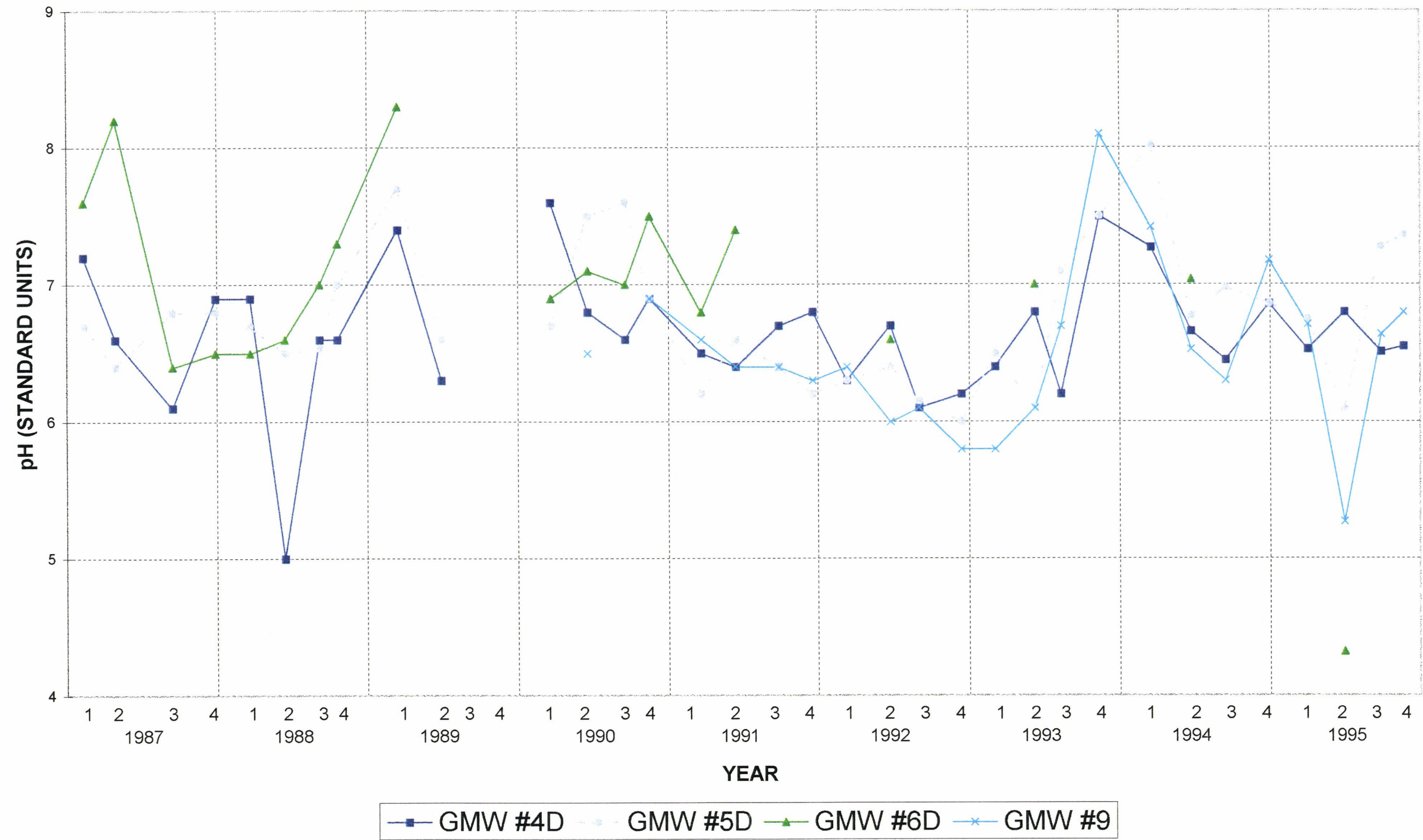
INLAND REALTY - MARYVILLE, MISSOURI

pH - SHALLOW WELLS



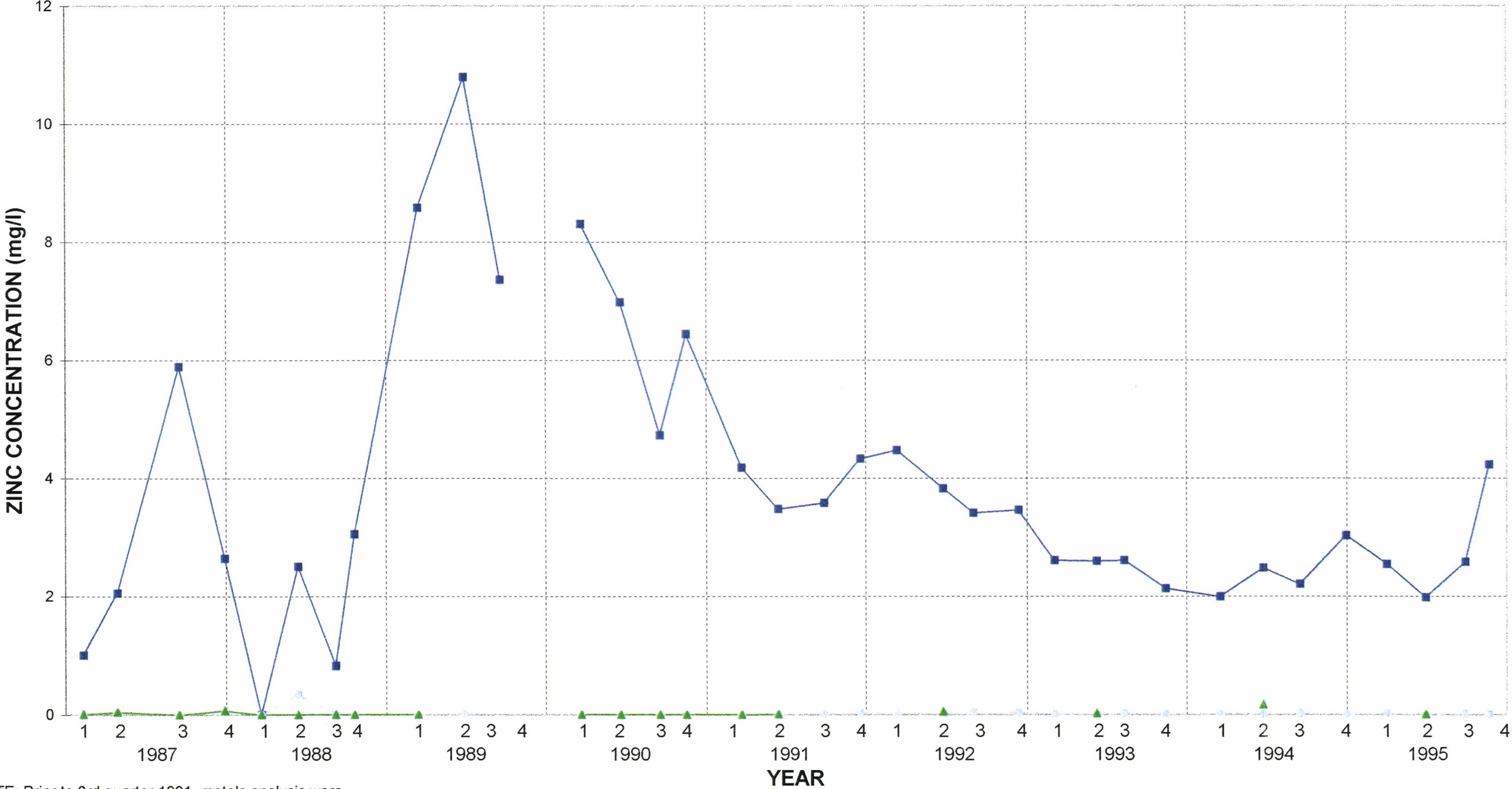
INLAND REALTY - MARYVILLE, MISSOURI

pH CONCENTRATION - DEEP WELLS



INLAND REALTY - MARYVILLE, MISSOURI

ZINC CONCENTRATION - SHALLOW WELLS

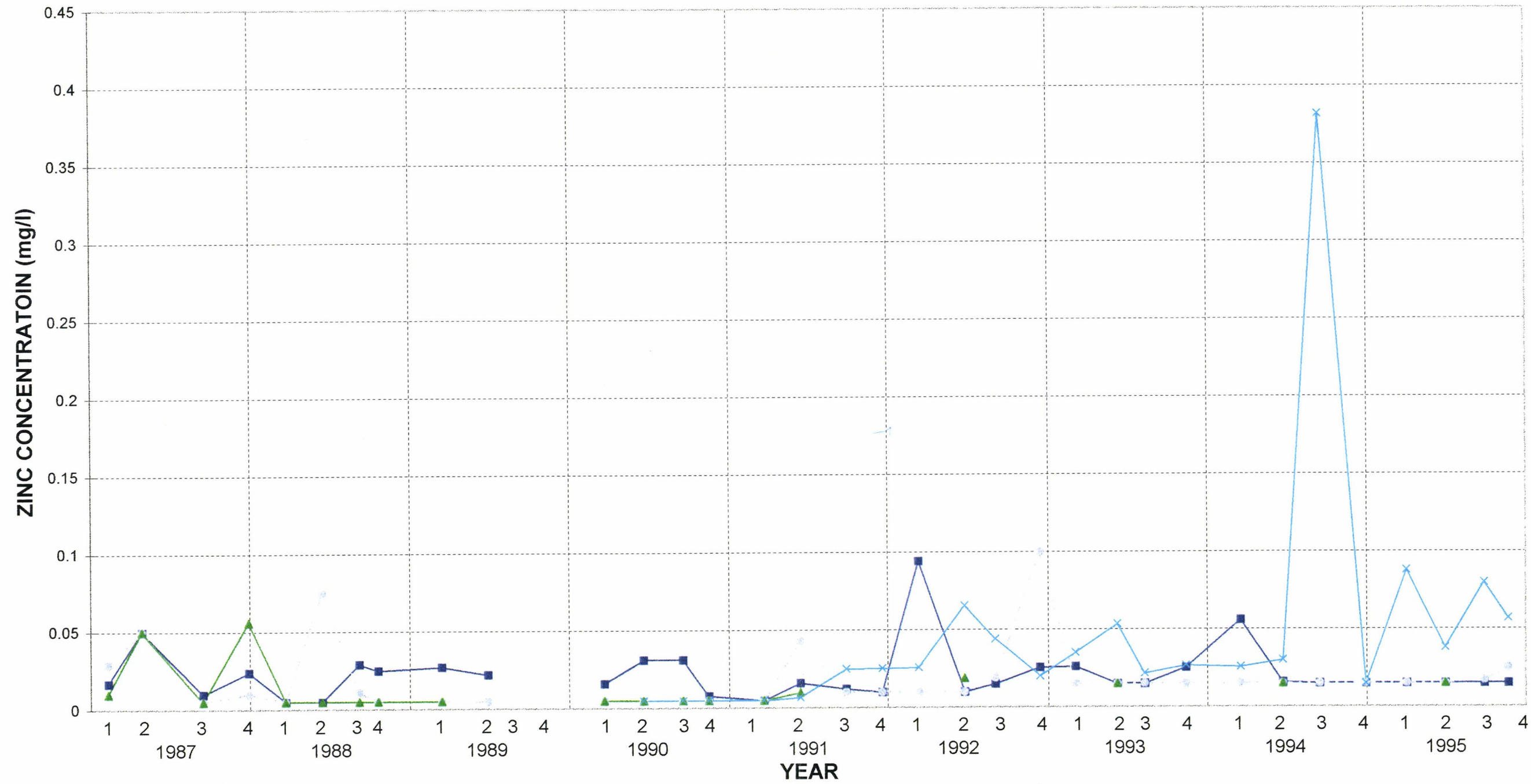


NOTE: Prior to 3rd quarter 1991, metals analysis were dissolved concentrations.
Ground Water Protection Standard - 1175 mg/l

—■— GMW #4S —◆— GMW #5S —▲— GMW #6S

INLAND REALTY - MARYVILLE, MISSOURI

ZINC CONCENTRATION - DEEP WELLS



NOTE: Prior to 3rd quarter 1991, metals analysis were dissolved concentrations.
Ground Water Protection Standard - 1175 mg/l

—■— GMW #4D - - - ● - - - GMW #5D —▲— GMW #6D —×— GMW #9